Supreme Court, U.S.
FILED
99- 991754 MAY 2 2000
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IN THE

Supreme Court of the United States

LEONARD R. KAHN,
Petitioner,

v.

GENERAL MOTORS CORPORATION,
Respondent.

ON PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

PETITION FOR A WRIT OF CERTIORARI

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QUESTIONS PRESENTED

1. Where Petitioner's Rule 60(b) Motion under the "savings clause" was based on uncontroverted affidavits which must be accepted as true (Neal v. Delaware, 103 U.S. 370, 396 (1880) and established that General Motors, and its attorneys, practiced a "fraud upon the court", did the lower courts err in not awarding appropriate sanctions?

2. Whether the Federal Circuit erred in holding that petitioner was "tardy" in failing to recognize the fraud at trial even though Hazel-Atlas Glass Co. v. Hartford-Empire Co., 322 U.S. 238, 246 (1944) makes the victim's diligence immaterial?

3. Did the Federal Circuit err in failing to properly apply Cooter & Gall v. Hartmarx Corp., 496 U.S. 384, 405 (1990) for its standard of review of "abuse of discretion"?

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PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

Petitioner Leonard R. Kahn respectfully petitions for a writ of certiorari to review the judgment of the Federal Circuit Court of Appeals in this case.

OPINIONS BELOW

The Federal Circuit opinion on the Rule 60(b) motion (App. A) is reported at Kahn v. General Motors Corp., 1999 WL 1211855 (Fed. Cir.). The district court opinion relating to the same motion (App. B) is reported at Kahn v. General Motors Corp., No. 88 Civ. 2982, 1998 WL 812053 (S.D.N.Y. Nov. 17, 1998). The Federal Circuit opinion on the merits (App. C) is reported at Kahn v. General Motors Corp., 135 F.3d 1472 (Fed. Cir. 1998). The district court opinion on the merits (App. D) is reported at Kahn v. General Motors Corp., No. 88 Civ. 2982, 1997 WL 37581 (S.D.N.Y. Jan. 29, 1997).

STATEMENT OF JURISDICTION

The judgment of the Federal Circuit Court of Appeals was entered on December 14, 1999. The Court of Appeals entered an order denying a timely petition for rehearing and declining a petition for rehearing en banc on February 2, 2000 (App. E).

The jurisdiction of this Court is invoked under 28 U.S.C. § 1254(1).

RULE INVOLVED

The Federal Rules of Civil Procedure, Rule 60(b)(6) provides, in pertinent part:

> **Rule 60. Relief From Judgment or Order**
> (b)...On motion and upon such terms as are just, the court may relieve a party or a party's legal representative from a final judgment, order, or proceeding for the following reasons: ...(6) any other reason justifying relief from the operation of the judgment. The motion shall be made within a reasonable time, and for reasons (1), (2), and (3) not more than one year after the judgment, order, or proceeding was entered or taken. ... This rule does not limit the power of a court to entertain an independent action to relieve a party from a judgment, order or proceeding, ... or to set aside a judgment for fraud upon the court. ...

STATEMENT

This case was brought as a civil action for patent infringement. The patent, of which petitioner is the owner covers an AM-stereo radio. From the outset, the only basis of federal court jurisdiction over this case has been the "Patent Laws of the United States." 28 U.S.C. § 1338.

This patent infringement suit was filed in the Southern District of New York on April 29, 1988. The plaintiff petitioner alleged that Defendant General Motors' AM Stereo radio receivers infringed Claims 53 and 54 of U.S. Patent 4,018,994 (the '994 Patent). The case was stayed as per a June 10, 1988 show cause order favoring a declaratory judgment suit filed subsequent to the filing of this suit, in the Federal District Court in Chicago by Motorola,

General Motors' indemnitor, and the firm that has taken control of the defense of this action. The Chicago suit named Kahn and Hazeltine (Kahn's licensing agent) as defendants and was dismissed when the Court declined to hear the suit stating that it may serve to harass a pro se party.

Prior to the dismissal of the Chicago suit, Kahn appealed the New York Court's stay order and the Federal Circuit, 889 F.2d 1078 (Fed. Cir. 1989), unanimously found for Kahn and remanded the case to the Southern District of New York for prompt action.

In 1994 a trial was held concerning Kahn's title of the '994 Patent and on December 27, 1994 Judge Baer found that Kahn held title to the '994 Patent. However, the trial court certified questions on the title issue and the CAFC unanimously found that Kahn held legal and equitable title to the '994 Patent. 77 F.3d 457 (Fed. Cir. 1996).

In April 1996 a seven day bench trial covering the issues of infringement, validity and damages was held by Judge Baer. On January 27, 1997 Judge Baer issued a Decision and Order finding claims 53 and 54 of '994 Patent invalid under 35 U.S.C. 103 and not infringed by General Motors. The finding of non-infringement was essentially based upon respondent's demonstration exhibit DX266.

On February 3, 1998, the Federal Circuit affirmed the district court's holding of non-infringement and reversed the holding of invalidity. The affirmance of non-infringement was based on an analysis by the Court of Appeals that was different than the district court's and was not based upon respondent's demonstration exhibit DX266. On March 26, 1998 a petition for rehearing was denied and the suggestion for en banc rehearing was declined. This Court denied a petition for a writ of certiorari.

On August 14, 1997 petitioner filed a letter motion with the district court inter alia advising that General Motors willfully misled the Court with its DX266 demonstration in obtaining the judgment of non-infringement entered on February 10, 1997. That matter was informally held in abeyance with General Motors agreeing to retain the pertinent evidence relating to the DX266 demonstration.

On June 12, 1998, petitioner made a motion under Rule 60(b) to set aside the judgment and to strike General Motors' defenses.

The district court, Harold Baer, Jr. J., denied petitioner's motion under Rule 60(b) on November 17, 1998 (Appendix B, 7a to 12a) on the grounds that petitioner's affidavits "are insufficient to set aside the judgment on account of fraud" (App. 9a) and on the ground that the aggrieved party seeking relief under the savings clause of Rule 60(b) must demonstrate that "there was no opportunity to have the ground now relied upon to set aside the judgment fully litigated in the original action." It further held that the petitioner "had the opportunity to cross-examine the defendant's witnesses concerning the nature of the DX266" (App. 11a).

On December 14, 1999 the Federal Circuit rendered an opinion (Appendix A) affirming the district court's order denying petitioner's motion under the savings clause of Rule 60(b) on the ground that a "tardy attack was made on evidence presented at trial, by means of witnesses and argument that should have and could have been presented at trial" and that the "district court acted within its discretionary authority" (App. 6a). A petition for rehearing and suggestion for rehearing en banc was denied and declined respectively on February 2, 2000 (App. 45a).

REASONS FOR GRANTING THE WRIT

THE DECISION OF THE COURT OF APPEALS CONFLICTS WITH DECISIONS OF THE SUPREME COURT AND WITH PRIOR DECISIONS OF THE FEDERAL CIRCUIT AND OTHER REGIONAL CIRCUITS

The Standard of Review Applied By The Federal Circuit

The Federal Circuit reviewed the District Court's ruling under Fed. R. Civ. P. 60(b) on the standard of an abuse of discretion (App. 2a). In conducting its review, the Federal Circuit overlooked and failed to apply this Court's holding in Cooter & Gell v. Hartmarx Corp., 496 U.S. 384, 405, 110 S.Ct. 2447, 110 L.Ed. 359 (1990):

> - A district court would necessarily abuse its discretion if it based its ruling on an erroneous view of the law **or** on a clearly erroneous assessment of the evidence.

Accord: Fraige v. American-National Watermattress, 996 F.2d 295, 27 U.S.P.Q. 2d 1149 (Fed. Cir. 1993); and Transaero v. La Fuerza Aerea Bolivina, 162 F.3d 724, 729 (2d Cir. 1998).

Here the District Court's ruling was based on:

(i) an error of law in holding that the **undisputed** affidavits of petitioner's distinguished engineers "are insufficient to set aside the judgment on account of fraud" (App. 9a). The thrust of the Federal Circuit's opinion was to implicitly accept that petitioner's three affidavits in support of his Rule 60(b) motion did set forth facts that revealed GM's "fraud on the court" (App. 3a-4a). Nevertheless, it

affirmed "because the district court acted within its discretionary authority in denying Mr. Kahn's Rule 60(b) motion" (App. 6a). Thus, the Federal Circuit failed to follow this Court's holding in Cooter that a district court abuses its discretion where its ruling is based on an error of law; and

(ii) a "clearly erroneous assessment of the evidence" by overlooking the unchallenged affidavit of Professor Bennett, who held the Charles Baldwin Sawyer Chair in Engineering and Applied Science at Yale University (App. 50a), and who stated (App. 52a) that the demonstration exhibit and testimony at trial was "key to the finding of noninfringement" but it "was offered without any theoretical support, and crucially, without any distortion measurements" and where the "mathematics fully supports" the petitioner's expert's (Mr. Minter's) conclusions that the "test conditions" in the "demonstration are completely **artificial**" and that presenting such demonstration was "designed to **deceive**" the Court and plaintiff "as to the true functioning of General Motor's stereo receivers".

The Failure to Apply This Court's Decisions To The Facts Here

The Federal Circuit's decision conflicts with the precedent of this Court. In Hazel-Atlas Glass Co. v. Hartford-Empire Co., 322 U.S. 238, 244-46, 64 S.Ct. 997, 1000-01, 88 L.Ed. 1250 (1944), this Court set aside a judgment obtained years earlier based on three grounds: (i) the Court determined that the fraud was clearly established -- here, the undisputed affidavits of petitioner's experts "clearly" establish the fraud on the Court through the use of a fabricated demonstration exhibit and testimony designed by General Motors and its attorneys to deceive the Court into making a finding of non-infringement; (ii) the Court noted that fraud, "especially in a patent case, ... is a matter of public concern, with effects extending beyond the parties in

the litigation," and "preservation of the integrity of the judicial process" does not depend upon the "diligence of the litigants" -- here, as a patent case and a "matter of public concern", "preservation of the integrity of the judicial process" must be of paramount importance; and (iii) a court cannot accurately assess the effect of the fraudulent conduct and thus must presume that the defrauding party would commit the fraud only when confident of its effectiveness -- here the fraud was effective -- see the judgment of non-infringement based on the DX266 demonstration.[1]

Therefore, Hazel Atlas is compelling authority for the grant of this petition. See also, Chambers v. Nasco, Inc., 501 U.S. 32 (1991); Universal Oil v. Root Refining, 328 U.S. 575, 66 S.Ct. 1176 (1946) and Mammoth Oil Co., v. United States, 275 U.S. 13 (1927).

In the District Court petitioner submitted three uncontraverted affidavits from engineers offering detailed opinions on the complex technology used to orchestrate the fraud, including sworn statements of Mr. Minter, past president of the Audio Engineering Society, and Professor Bennett, a chaired Yale Professor of Science and Engineering.

The Federal Circuit described Mr. Minter's affidavit as stating that (App. 3a-4a):

> he had conducted various tests and that he believed that the Buchwald demonstration

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[1] The DX266 demonstration was central to the District Court's finding of non-infringement as per the following quotation:

> Buchwald performed a demonstration [the DX266 demonstration] ... From this, **he concluded and I find** that the cosine [distortion correction] signal is not derived from the L+R signal... [as required by the '994 claims]. (App. 36a).

> was "carefully designed to willfully deceive the Court into believing a totally false description of the true operation of GM's AM Stereo radio which indeed incorporates [the relevant claim element]."

And the Federal Circuit described Professor Bennett's affidavit as averring that (App. 4a):

> the Buchwald demonstration was defective and that General Motor's [sic] conclusions regarding the demonstration were erroneous. Professor Bennett emphasized that "the measurements that should have been provided as per any scientific test, were never provided to the Court."

Nobody has contested these affidavits. Not GM, not the district court, and not the Federal Circuit.

GM did not offer a single measurement refuting the measurements and the analysis in the said affidavits. Indeed, it is telling that GM and its attorneys did not file any answering affidavits to appellant's three affidavits. As a matter of law, each and every material fact stated in appellant's three affidavits must be deemed to be true. Neal v. Delaware, 103 U.S. 370, 396 (1880), Mammoth Oil Co. v. United States, 275 U.S. 13, 52 (1927) re "Teapot Dome." Those undisputed affidavits establish a fraud on the Court. As a result of that fraud, GM obtained a judgment of non-infringement. It is also uncontested that the DX266 demonstration was critical in persuading the District Court that there was no infringement by the accused device. Thus, there is no genuine issue of material fact on the issue of fraud on the court.

Furthermore, the transcript proves that GM's attorneys were involved with every aspect of DX266, its preparation and the scheme to keep it secret. General Motors' attorney asked Mr. Buchwald the following question: "Did you prepare a demonstration in conjunction with the **attorneys** and experts for General Motors in this case with AM stereo receivers? Mr. Buchwald answered: "Yes, I did." (App. 68a). Thus, inasmuch as DX266 was presented to deceive the trial court, there is **conclusive** evidence of the participation by GM's attorneys in the "fraud on the court" as set forth in Gleason v. Jandrucko, 860 F.2d 556, 559 (2d Cir. 1988). That Court, in making reference to the fraud on the court found in Hazel-Atlas, stated[2]:

> Proof of a **scheme to defraud together with the complicity of the offending party's lawyers** in Hazel-Atlas was, in the Court's judgment, **conclusive evidence of fraud on the court.**

Here, like in Hazel-Atlas, we have a "scheme to defraud together with the complicity of the offending parties' lawyer[s]." Thus, here also, there is as a matter of law **"conclusive evidence of fraud on the court**."

GM is in no position now to dispute the effectiveness of its fraud. Hazel-Atlas, 322 U.S. at 247. The law is clear. There is no "but for" test. Thus, it is now irrelevant -- absent the DX266 demonstration -- whether or not GM would have won the case. Now GM's fraudulent conduct during the litigation -- in deceiving the courts and appellant -- has been exposed and must be punished. As Chambers held (501 U.S. at 53):

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[2] Emphasis supplied throughout, unless otherwise noted.

> ... the imposition of sanctions under the bad-faith exception depends **not on which party wins** the lawsuit, but on how the parties conduct themselves during the litigation.

Therefore, Kahn does not have to establish that but for the fraud on the Court, he would have prevailed on the issue.

In Hazel-Atlas, 322 U.S. at 250, 64 S.Ct. at 1003, a "trail of fraud continued without break [from the PTO] through the District Court and up to the Circuit Court of Appeals." It warranted setting aside the judgment. Here, there was a "fraud" committed in the District Court and therefore appropriate sanctions must be imposed under the Court's inherent power. Chambers, 501 U.S. at 44:

> The Supreme Court held that the District Court relied on its inherent power in imposing sanctions, "stressing that '[t]he wielding of that inherent power is particularly appropriate when the offending parties have practiced a fraud upon the court' "(id. 42). The highest court went on to say that "the inherent power also allows a federal court to vacate its own judgment upon proof that a fraud has been perpetrated upon the court".

As the Supreme Court held in Hazel-Atlas, 322 U.S. at 246, "we find it surpassingly difficult to conceive of a more appropriate use of a court's inherent power than to protect the sanctity of the judicial process."

It should be stressed that the attorneys for respondent here made the false representations themselves and participated in the fraudulent demonstration and have

repeated their misrepresentations even after it was called to their attention. Moreover, inasmuch as the attorneys for the respondent are part of the judicial machinery as officers of the Court, then that has become a fraud on the Court. In Kupferman v. Consolidated Research and Manufacturing Corporation, 459 F.2d 1072, 1078 (2d Cir. 1972) (Friendly, J.), the Court held:

> While an attorney "should represent his client with singular loyalty, that loyalty obviously does not demand that he act dishonestly or fraudulently; on the contrary his loyalty to the court, as an officer thereof, demands integrity and honest dealing with the court. And when he departs from that standard in the conduct of a case he perpetrates a fraud upon the court." 7 Moore, supra, at 513 (footnote omitted).

GM's attorneys departed from their obligation of "integrity and honest dealing with the Court" and thus perpetrated a fraud upon the court.

General Motors and its attorneys, Kirkland & Ellis, in their letter brief answering petitioner's Rule 60(b) motion stated (App. 59a):

> No facts or information were hidden from Mr. Kahn or the court and no misrepresentations were made.

But that further representation is in square conflict with the **affidavit** of Professor Bennett who stated that GM's demonstration exhibit DX266 "was offered without theoretical support, and **crucially, without any distortion measurements**. Professor Bennett further explained (App. 52a):

> I say "crucially", because it is inconceivable to me that any engineer, indeed any layman, would perform a decisive test of an alleged infringing distortion correction circuit for submission to a federal court **without carefully making and recording distortion measurements**.

It is telling that General Motors, its lawyers and experts failed to answer the affidavits of Professor Bennett and Mr. Minter with any affidavits under the penalty of perjury. Moreover, Professor Bennett's and Mr. Minter's affidavits demonstrate conclusively that Kirkland & Ellis' letter brief is a further blatant misrepresentation. Simply put -- there had to be "distortion measurements" and they obviously did not support the proposition for which DX266 was offered.

Professor Bennett further decimated the DX266 demonstration as follows: (App. 53a):

> from a mathematical information theory viewpoint the test signal is not "compatible" nor is it a "stereo" signal. It is a defective dual channel system, totally **artificial**.
>
> x x x
>
> Thus, GM's infringement defense, . . . **defies engineering logic** (App. 53a).
>
> x x x
>
> There is **physical evidence** that provides independent proof that GM's Buchwald DX266 Demonstration is **unsound** . . . The

> use of such precision confirms Mr. Minter's opinion that the DX266 Demonstration signal could **not** have been . . . the result of a **mere accident** (App. 54a).
>
> x x x
>
> Clearly, GM's DX266 Demonstration is **totally without merit** (App. 55a).

Mr. Minter stated that the test conditions are completely artificial and preclude any meaningful demonstration of a stereophonic system, and presenting such a demonstration would only mislead one viewing the demonstration, it was designed to deceive observers as to the true functioning of General Motors' stereo receivers. Mr. Minter further stated that he didn't believe that any engineer could have so ignored his training and accepted such an illogical concept without full support of detailed laboratory distortion measurements. No such measurements were ever provided and no justification for not providing such measurements were ever offered by General Motors.

In Publicker v. Shallcross, 106 F.2d 949, 952 (3d Cir. 1939), cert. denied, 308 U.S. 624, 60 S.Ct. 379, 84 L.Ed. 521 (1940), that Court of Appeals, in relieving a party of an unjust judgment, stated: "We believe **truth** is more important than the trouble it takes to get it." That proposition is directly applicable here.

GM's lawyers have a different and narrower definition of fraud on the Court. They say it is (App. 58a):

> confined to the "most egregious cases, such as bribery of a judge or juror, or improper influence exerted on the court by an attorney, in which the integrity of the court

> and its ability to function impartially is directly impinged." *Great Coastal Express, Inc. v. International Brotherhood of Teamsters*, 675 F.2d 1349, 1356 (4th Cir. 1982).

But GM's lawyers' narrow reading of Great Coastal Express, Inc., is wrong because the Fourth Circuit continued its discussion of fraud on the Court by citing from Moore's Federal Practice, which explicitly included: "a fraud perpetrated by officers of the court so that the judicial machinery can not perform in the usual manner its impartial task of adjudging cases that are presented for adjudication" (675 F.2d at 1356). The Fourth Circuit then cited Martina Theater Corp. v. Schine Chain Theaters, 278 F.2d 798 (2d Cir. 1960) as also following Moore. We know from the subsequent decision of Kupferman in the Second Circuit that a failure of integrity and honest dealing by the attorneys as officers of the Court results in "fraud on the court". GM's lawyers apparently believe that an attorney's participation in a scheme that fabricates a critical demonstration that leads to a finding of noninfringement is not a fraud on the court. We submit it is. The holding by the district court and the Federal Circuit apparently has adopted the view of General Motors' lawyers that fabricating demonstrations falls under General Motors' lawyers' rubric of "fair litigation of the dispute."[3] This is another extraordinary reason why this Court should grant the petition here. It is of national importance that the

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[3] Kirkland & Ellis stated (App. 59a): "Fraud on the court cannot occur where Mr. Kahn was afforded an opportunity for fair litigation of the dispute, because fraud on the court occurs only where the alleged fraud seriously affects the integrity of the normal process of adjudication." The district court appeared to adopt this view when it held that despite the evil of perpetrating a fraud on the court, it is the other party's burden to uncover it during the trial (App. 6a). Thus, if that view were to prevail, there would be no relief for fraud under Rule 60(b). In net effect, the district court's ruling vitiates all fraud under Rule 60(b) and Chambers.

bar of this country, again is told, that the holding of Hazel-Atlas is still the governing law that "proof of a scheme to defraud together with the complicity of the offending party's lawyers ... [is] conclusive evidence of fraud on the court." Gleason, 860 F.2d at 559 setting forth the holding in Hazel-Atlas. The national bar must also be told that violation of that cardinal principal will result in the most severe and drastic penalties, such as striking a defendant's defenses [or a plaintiff's complaint] and directing an inquest on damages.[4] The sanction imposed here must be severe enough to punish General Motors for its and its attorneys' outrageous misconduct.

The Federal Circuit appeared to have adopted the reasoning of the district court on petitioner's Rule 60(b) motion. The Court of Appeals held (App. 5a-6a):

> The [district] court reasoned that the asserted fraud should have been raised at the trial, stating that Mr. Kahn had ample opportunity to do so, and to present the evidence he now proffers.
>
> x x x
>
> The district court gave weight to the strong policy for upholding the finality of judgments, a tardy attack was made on evidence presented at trial, by means of witnesses and argument that should have and could have been presented at trial. We conclude that the district court acted within its discretionary authority in denying Mr. Kahn's Rule 60(b) motion.

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[4] See, *National Hockey League v. Metropolitan Hockey Club, Inc.*, 427 U.S. 639, 643 (1976).

That holding effectively vitiates all claims of "fraud on the court" under the "savings clause" of Rule 60(b). For the Court of Appeals to say from a highsight position that "a tardy attack was made on evidence presented at trial, by means of witnesses and argument that should have and could have been presented at trial" demonstrates the Court's failure to comprehend the effectiveness of the fraud -- and most importantly the crucial concealment of any and all "distortion measurements". As the Court of Appeals stated in its opinion, Mr. Kahn's "first step was to duplicate the demonstration" which was a "most difficult job" and required "extensive laboratory experimentation, use of very high-precision special parts and delicate adjustments to precisely reconstruct the photographs that comprised exhibit DX266," (App. 4a). The Federal Circuit further quoted Mr. Kahn that "only after intensive analytical and laboratory work was he able to uncover the fraud in the demonstration." (Id.). Those facts were not challenged by any affidavits from GM. In short, the Federal Circuit has not cited any analysis as to how Mr. Kahn "should have and could have" presented the evidence in Mr. Minter's and Professor Bennett's affidavits in support of his Rule 60(b) motion at trial. Despite those affidavits, the district court held that the allegations in the affidavits "are insufficient to set aside the judgment on account of fraud". Once fraud is established, Rule 60(b) is in place to correct that judgment. The courts below -- by their decisions -- have realistically read "fraud on the court" out of that rule and Chambers.

In Hazel-Atlas, it is noteworthy that "Hazel-Atlas had received preliminary information **during the litigation** that the authorship of the article was fraudulent. Following the court of appeals decision, investigation began in earnest" (Great Coastal Express, Inc., 675 F.2d at 1355). It took many years before Hazel-Atlas was able to prove the fraud. Here, petitioner sent an August 14, 1997 letter motion to the

District Court that he had the "necessary special equipment built to test out what I believed was GM's most ingenious method to prove the 'impossible'," and that petitioner's "laboratory tests confirmed" his theory (App. 63a). Mr. Kahn stated that the DX266 "demonstration 'proved' that my theory of infringement, based upon conventional analysis, was wrong and GM's theory, in conflict with its own design drawings, was correct." (id.). Mr. Kahn asked the Court for an order to "preserve all relevant" evidence re the DX266 Demonstration (App. 63a). Mr. Kahn also stated that the DX266 demonstration was the only support for the District Court's noninfringement decision and won the case for General Motors (App. 63a-64a). In concluding, the petitioner cited Hazel-Atlas for the **"historic power of equity to set aside fraudulently begotten judgments"** (App. 66a).

We submit here that the critical date of entry is the modified judgment of the **Federal Circuit** entered in the district court on April 14, 1998[5]. Certainly, petitioner's formal motion under Rule 60(b), filed on June 12, 1998 with reference to the modified April 14, 1998 judgment can not be called "tardy". Also, petitioner's letter motion of August 14, 1997 was even timely relating to the district court's judgment of February 10, 1997. Thus, petitioner -- as a matter of law -- was not tardy.

Moreover, it is hornbook law that there is no statute of limitations when it comes to the doctrine of "fraud on the

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[5] Inasmuch as the appeal to the Federal Circuit resulted in a substantive change to the District Court's judgment, then the one-year period of limitations for making a 60(b) motion "would run from the substantially modified order entered on mandate of the appellate court. Federal Trade Commission v. Minneapolis-Honeywell Co., 344 U.S. 206, 73 S.Ct. 245, 97 L.Ed. 245 (1952)." Transit Casualty Company, etc., et al., v. Security Trust Company, etc. et al., 441 F.2d 788, 791 (5th Cir. 1971); Gegenheimer v. Galan, 920 F.2d 307, 310 (5th Cir. 1991).

court" which falls under Rule 60(b)'s "savings clause". See Hazel-Atlas.

The Federal Circuit's reliance on the prior Ecklund affidavit to show tardiness overlooks the fact that this demonstration bears no relationship to the fabricated DX266 demonstration (App. 53a-54a). And since Prof. Bennett explicitly mentioned that he studied the Ecklund blocks in coming to his opinion supporting a finding of fraud (App. 50a and 53a-54a), and inasmuch as Professor Bennett's and Mr. Minter's affidavits are undisputed by GM, Neal requires the Court to accept their analysis.[6]

The Federal Circuit faults petitioner for not having discovered these serious acts to defraud the Court, while they were happening. Petitioner should not be penalized because of General Motors' and its attorneys' painstaking effort to practice its fraud without revealing their deception. Indeed, it took petitioner's hard work and ingenuity to discover the fraud after the fact. Petitioner should not be judged by hindsight in his failure to discover the fraud at trial, which he maintains **no engineer could have discovered without intensive laboratory investigation.** The center of focus, as a matter of law, must be General Motors' and its attorneys' fraud on the court.

The Hazel-Atlas relief of a new trial is totally inappropriate for the instant case. Indeed, a new trial would not effectively sanction respondent, but instead would impose a severe hardship on petitioner, who is 73 years old and a victim of the fraud. A new trial would, in effect, grant

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[6] The Federal Circuit's reference (App. 5a) to GM's argument that they submitted a detailed list of the equipment to be used in connection with the DX266 demonstration overlooks the critical fact that GM never listed the key circuit that made the deception work.

respondent a delay of several more years which would further implement its strategy of economic and judicial in terrorem. Such putative "sanctions" certainly would never punish or deter General Motors and its attorneys from repeating such conduct. Realistically, from General Motors' standpoint, the fraud proved to be a viable and most rewarding litigation strategy.

Accordingly, appellant respectfully requests "appropriate" monetary sanctions at a level sufficient to punish and to deter repetition of such conduct. Hazel-Atlas and Chambers, 501 U.S. at 44-45, 50. Not only is this the law, but equity and the preservation of our judicial system demand that General Motors and its attorneys not go unpunished for their blatant scheme to defraud the trial court and the petitioner.

Inasmuch as the fraud on the Court has been established as a matter of law, we urge this Court to finally bring this lengthy litigation to a close by exercising its inherent power by sending this case back to the lower courts with a direction to impose appropriate monetary sanctions against General Motors Corporation to punish and to deter such outrageous misconduct.

CONCLUSION

The petition for a writ of certiorari should be granted.

Respectfully Submitted,

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APPENDIX A

NOTE: Pursuant to Fed. Cir. 47.6, this disposition is not citable as precedent. It is a public record. The disposition will appear in tables published periodically.

United States Court of Appeals for the Federal Circuit

99-1335

LEONARD R. KAHN,

v.

Plaintiff-Appellant

v.

GENERAL MOTORS CORPORATION,

Defendant-Appellee.

DECIDED: December 14, 1999

Before NEWMAN, LOURIE, and GAJARSA, Circuit Judges.

NEWMAN, Circuit Judge.

Leonard R. Kahn appeals the decision of the United States District Court for the Southern District of New York

denying his motion under Fed. R. Civ. P 60(b) to set aside the judgment in Kahn v. General Motors Corp., No. 88 Civ. 2982, 1997 WL 37581 (S.D.N.Y. Jan. 29, 1997)[1] Because the district court's decision is within its range of discretionary authority, we affirm the decision.

Jurisdiction - Standard of Review

The gravaman of the issue is an alleged fraud on the court, brought before the district court by motion under Fed. R. Civ. P 60(b)(6). Mr. Kahn initially took this appeal to the Second Circuit, which court transferred the appeal to us. Mr. Kahn now requests that we return the case to the Second Circuit, arguing that the district court's jurisdiction is based on its inherent power to correct a fraud on the court and not on 28 U.S.C. §1338, and thus that the Federal Circuit is not the appropriate appellate body. However, the motion relates directly to and arises from the underlying patent infringement suit, for the requested remedy includes relief from the judgment of non-infringement. Thus jurisdiction is properly in Federal Circuit.

Rule 60(b) provides extraordinary post-judgment remedy, to strike a balance between "serving the ends of justice and preserving the finality of judgments." Nemaizer v. Baker, 793 F.2d 58, 61 (2d Cir. 1986). The Rule provides extraordinary relief, and is available only in exceptional circumstances. See id. The district court's ruling is reviewed on the standard of an abuse of discretion. See Browder v. Director, Dep't of Corrections of Illinois, 434 U.S. 257, 263 n. 7 91978)("The Court of Appeals may review the ruling only for abuse of discretion, however, and an appeal from denial of Rule 60(b) relief does not bring up the underlying judgment for review.).

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[1] Kahn v. General Motors Corp., No. 88 Civ. 2982, 1998 WL 812053 (S.D.N.Y. Nov. 17, 1998).

DISCUSSION

Mr. Kahn asserts fraud in certain evidence presented at the trial of a patent infringement suit he brought against General Motors. During the trial (in April 1996) General Motors, through its witness Gregory Buchwald (a Motorola engineer), demonstrated the operation of the accused devices. General Motors also provided expert testimony regarding this demonstration. At the conclusion of Mr. Buchwald's testimony General Motors offered an exhibit, designated as DX-266, into evidence that showed with photographs the results of the Buchwald demonstration. Although Mr. Kahn cross-examined Mr. Buchwald and challenged his knowledge of electronics, Mr. Kahn raised none of the issues of fraud now asserted against the witness, General Motors, and counsel.

Following the district court's judgment in January 1997, Mr. Kahn appealed to this court. He criticized the Buchwald demonstration and the conclusions drawn therefrom, although he did not assert that it was fraudulent. Mr. Kahn described the Buchwald demonstration as "voodoo measurements" and "patently erroneous 'proof' which totally violates GM's own theory of operation." In February 1998 the Federal Circuit affirmed the district court's holding of non-infringement and reversed the holding of patent invalidity. Kahn v. General Motors Corp., 135 F.3d 1472, 1481 (Fed. Cir. 1998).

In June 1998 Mr. Kahn filed the instant motion in the district court, charging General Motors with "fraud on the court" and stating that the Buchwald demonstration was a deliberate attempt to deceive the court. Mr. Kahn provided three affidavits, of himself and two other distinguished engineers. Mr. Minter, a past president of the Audio Engineering Society, stated that he had conducted various

tests and that he believed that the Buchwald demonstration was "carefully designed to willfully deceive the Court into believing a totally false description of the true operation of GM's AM Stereo radio which indeed incorporates [the relevant claim element]." Professor Bennett, who held the Charles Baldwin Sawyer Chair in Engineering and Applied Science at Yale University, averred that the Buchwald demonstration was defective and that General Motor's conclusions regarding the demonstration were erroneous. Professor Bennett emphasized that "the measurements that should have been provided as per any scientific test, were never provided to the Court."

In his own affidavit Mr. Kahn explained that after he filed his reply brief in the Federal Circuit on July 16, 1997, he "finally had time to focus on the all-important surprise DX266 trial demonstration." His first step was to duplicate the demonstration, which he explained "was a most difficult job requiring extensive laboratory experimentation, use of very high-precision special parts and delicate adjustments to precisely reconstruct the photographs that compromised exhibit DX266." He averred that only after intensive analytical and laboratory work was he able to uncover the fraud in the demonstration. Mr. Kahn argued that Mr. Buchwald and his evidence was a surprise. He stated that DX266 was not identified as a trial exhibit, and that Mr. Buchwald testified as an expert although he had been listed as a fact witness.

General Motors in response states that Mr. Kahn had notice of the demonstration and the witnesses, and chose not to depose Mr. Buchwald; thus he could not allege surprise. Mr. Kahn cross-examined Mr. Buchwald at some length, but did not raise the issues he now raises, or request additional time. He did not offer at trial any testimony or argument of the content he now offers. General Motors states that it disclosed the Buchwald demonstration to Kahn in accordance

with the rules set by the district court for demonstrative exhibits. On March 29, 1996, the date on which demonstrative exhibits were to be disclosed, General Motors sent Mr. Kahn a detailed list of the equipment to be used in connection with the demonstration.

General Motors also points out that the Buchwald demonstration illustrated an argument that General Motors had been making over several years of these prolonged proceedings. In 1989 General Motors submitted an affidavit by Lawrence M. Ecklund that illustrated with diagrams the same point as that illustrated by the Buchwald demonstration. This affidavit, presented with a motion for summary judgment, was not disputed by Mr. Kahn.

The district court reviewed the written materials provided with the Rule 60(b) motion, and declined to reopen the case. Although Mr. Kahn argues that the absence of distortion measurements in the Buchwald presentation was a conspicuous lapse, and that a skilled engineer or lawyer experienced in electrical engineering "could, after glancing at GM's drawings," see the flaws in the demonstration results, he did not raise this issue at trial. The court reasoned that the asserted fraud should have been raised at the trial, stating that Mr. Kahn had ample opportunity to do so, and to present the evidence he now proffers.

In his affidavit to the district court, Mr. Kahn stated that only after he filed his reply brief in the Federal Circuit on July 16, 1997 did he have the time "to focus on the all-important surprise DX266 trial demonstration." On this appeal, Mr. Kahn further explains that he did not raise an issue of fraud at trial because "he truly believed that the defendant's equipment was in some way defective and that an honest mistake had been made." On appeal, Mr. Kahn challenges the adequacy of the district court's investigation into the alleged fraud, stating that he should have been

allowed to depose those involved in preparing the Buchwald demonstration and that there should have been an evidentiary hearing.

The district court gave the weight to the strong policy for upholding the finality of judgments. A tardy attack was made on evidence presented at trial, by means of witnesses and argument that should have and could have been presented at trial. We conclude that the district court acted within its discretionary authority in denying Mr. Kahn's Rule 60(b) motion.

We have also considered Mr. Kahn's arguments that the case was fraudulently argued on appeal to the Federal Circuit. However, in sustaining the district court's ruling, there remains no substantive basis for challenging the appellate process.

General Motors' Motion

Arguing that this appeal is frivolous, General Motors has requested that sanctions be imposed against Mr. Kahn. That request is denied.

Costs

No costs.

APPENDIX B

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

LEONARD R. KAHN,

Plaintiff,

v.

GENERAL MOTORS CORPORATION,

Defendant.

Hon HAROLD BAER, JR., District Judge:[2]

Plaintiff, Leonard R. Kahn, moves to set aside the Court's judgment entered February 10, 1997. For the reasons discussed below, the motion is DENIED.

I. Background

Plaintiff is a professional engineer and developer of electronic equipment who was involved in the development of AM stereophonic ("stereo") technology.[3] General Motors

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[2] Evan Weiner, a second year student at Fordham Law School, assisted in the research and preparation of this decision.

[3] The term stereophonic ("stereo") is defined as "pertaining to transmission and reception of audio information carried by a plurality of channels arranged to afford the listener a sense of spatial distribution of sound sources." The public, however, perceives the term "stereo" as much more comprehensive and equates the term with high fidelity ("hi-fi") performance implying good frequency response, low noise and low distortion.

Corp. ("GM") is the largest manufacturer of automobiles in the world. The defendant also manufactures and sells AM stereo radios.

On May 2, 1975, the plaintiff filed an application for a patent on "Compatible AM Stereophonic Receivers." Subsequently, on April 19, 1977 U.S. Patent No. 4,108,994 (the '994 patent was duly and regularly issued to the plaintiff. In April 1996, a bench trial was held. The plaintiff appeared *pro se*. At trial, the plaintiff asserted that the defendant's continuous and deliberate infringement of plaintiff's U.S. patent inflicted grievous and irreparable harm, damage and injury. He also claimed that the defendant induced others to similarly infringe the patent, disseminated results of negligently performed and biased AM stereo evaluation tests, issued false and confusing advertising material that concerned the capability of defendant's receivers and intentionally excluded plaintiff's system from its AM stereo receivers. In response, the defendant did not dispute that the plaintiff invented the AM radio technology covered by the '994 patent, but instead argued that he lost title through several convoluted transactions.

While the plaintiff was successful at this phase of the litigation, I held that he failed to prove the GM radio receivers infringed the '994 patent and that GM proved that Claims 53 and 54 of the '994 patent were invalid. The United States Court of Appeals for the Federal Circuit affirmed the non-infringement finding.

Plaintiff now contends that the defendant cause its witnesses to willfully deceive the Court at trial. Accordingly, he seeks relief given the alleged fraud upon the Court.[4] In

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[4] "Fraud upon the court" warranting relief from final judgment, as distinguished from fraud on an adverse party, is limited to fraud that

particular, the plaintiff claims that the defendant, its lawyers and witnesses executed two improper schemes: (1) intrinsic fraud with respect to the demonstration of the DX266; and (2) extrinsic fraud given the secretive nature of this demonstrative, thereby denying the plaintiff a full and fair trial.

II. Discussion

Rule 60(b) of the Federal Rule of Civil Procedure provides that a party to an action may seek to vacate a judgment on the ground of fraud, misrepresentation, or misconduct of an adverse party, within one year of the entry of a final judgment. Fed. R. Civ. P. 60(b); *Gleason v. Jandrucko*, 860 F.2d 556, 558 (2d Cir. 1988). Properly applied, Rule 60(b) strikes a balance between serving the ends of justice and finality. *See Nemaizer v. Baker*, 793 F.2d 58, 61 (2d Cir. 1986).

Alternatively, the inherent power of the court allows a judgment to be vacated upon proof that a fraud was perpetrated. *Chambers v .NASCO, Inc.*, 501 U.S. 32, 44 (1991). In this vein, the court possesses the power to conduct an independent investigation in order to determine whether it has been the victim of fraud. *Id.* Yet, inherent powers must be exercised with restraint and discretion. *Id.* Here, the plaintiff's allegations are insufficient to set aside the judgment on account of fraud.

A. Intrinsic Fraud

The plaintiff argues that the defendant may have perpetrated an intrinsic fraud on the Court by calling a surprise witness during the trial. The distinction between

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seriously affects the integrity of the normal process of adjudication. *See* Fed. R. Civ. P. 60(b); *Gleason v. Jandrucko*, 860 F.2d 556 (2d Cir. 1988).

extrinsic and intrinsic fraud is muddled, at best. Indeed, commentators have noted that it "rests on clouded and confused authorities, its soundness as a matter of policy is very doubtful, and it is extremely difficult to apply." *See Gleason*, 860 F.2d at 560 (quoting 11 C. Wright & A. Miller, Federal Practice and Procedure §2868, at 240-41 (1973)). Notwithstanding such difficulty, plaintiff contends that the testimony of Buchwald, a Motorola employee, included the introduction of a "precluded" exhibit, the Buchwald DX266. Although this Court made a non-infringement finding at trial, the plaintiff argues that the DX266 is flawed. To prove such, plaintiff hired J.B. Minter, an MIT trained engineer, to test the DX266. He claims that Minter's findings support plaintiff's allegations that the DX266 was designed to willfully deceive the Court with respect to the actual nature of GM's AM stereo radio.

The plaintiff, however, did not raise an allegation of fraud at trial or on appeal. If the plaintiff believed that fraud occurred, he should have raised it on these occasions. *See Gleason*, 860 F.2d at 559 (subsequently discovered evidence of perjury by a witness and nondisclosure of relevant evidence during pretrial discovery did not support finding of fraud upon the court required to set aside judgment). In other words, "[a]fter-discovered evidence . . . is simply not sufficient for a finding of fraud upon the court." *Id.* (citation and internal quotations omitted). Consequently, the testimony of Minter, designed to discredit the evidence offered by the defendant at trial, is hardly adequate to compel this Court to set aside its judgment.

Undoubtedly, "[p]erjury and fabricated evidence are evils that can and should be exposed at trial, and the legal system encourages and expects litigants to root them out as early as possible." *Great Coastal Express, Inc. v. International Brotherhood of Teamsters, Chauffeurs, Warehousemen and Helpers of America*, 675 F.2d 1349,

1357 (4th Cir. 1982). The plaintiff had ample opportunity to raise his concerns of fraud at trial. The failure to do so then, does not open the door now. *See Nemaizer*, 793 F.2d at 61 (final judgment given preclusive effect "not only as to all matters litigated and decided by it, but as to all relevant issues which could have been but were not raised and litigated in the suit")(citations and internal quotations omitted). There is nothing in this record or in the papers before me on this matter to suggest that plaintiff lacked the opportunity to litigate the issues he now raises. "[A]n aggrieved party seeking relief under the saving clause of Rule 60(b) still must [demonstrate] that there was no opportunity to have the ground now relied upon to set aside the judgment fully litigated in the original action." *Gleason*, 860 F.2d at 560 (citation and internal quotations omitted). Here, the plaintiff had the opportunity to cross-examine the defendant's witnesses concerning the nature of the DX266. The motion to vacate is denied.

B. Extrinsic Fraud

The plaintiff contends that the defendant committed extrinsic fraud by identifying the DX266 demonstration as an "Demonstrative Exhibit" so that notice would not be required. The defendant then went ahead and offered Buchwald as a "fact" witness to evade the requirements of expert testimony. Similarly, he argues that the defendant failed to include the DX266 among the list of exhibits submitted to the Court on the day of the trial, in violation of the pretrial order. Plaintiff contends this conduct clearly establishes extrinsic fraud.

The fact that the defendant informed the plaintiff it planned to conduct a demonstration using the DX266 as a demonstrative exhibit militates against a finding of fraud. The defendant clearly indicated the type of equipment it planned to use for the demonstrations and allowed the

plaintiff to conduct a pretrial examination. Again, if the plaintiff had any problems with the defendant's approach, he should have raised his concerns at trial. *See Nemaizer*, 793 F.2d at 61. In any event, "allegations of nondisclosure during pretrial discovery do not constitute grounds for an independent action under Fed. R. Civ. P. 60(b)." *Gleason*, 860 F.2d at 559-60.

Likewise, plaintiff never objected to the use of Buchwald at trial and cannot prevail on such an objection now. The defendant clearly identified Buchwald as a witness and afforded the plaintiff every opportunity to depose him. "Since 60(b) allows extraordinary judicial relief, it is involved only upon a showing of exceptional circumstances." *Nemaizer*, 793 F.2d at 61. Such circumstances are not present here. Accordingly, I deny the motion to vacate the judgment on the ground of extrinsic fraud pursuant to Rule 60(b) and the Court's inherent power.

III. Conclusion

For the foregoing reasons, plaintiff's motion to set aside the judgment is DENIED.

SO ORDERED.

New York, New York
November 16, 1998

/s/ Harold Baer, Jr.
U.S.D.J.

APPENDIX A

UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

97-1277

LEONARD R. KAHN,
Plaintiff-Appellant,

v.

GENERAL MOTORS CORPORATION,
Defendant-Appellee.

DECIDED: February 3, 1998

Before NEWMAN, RADER, and GAJARSA, *Circuit Judges*.

GAJARSA, *Circuit Judge*.

DECISION

Leonard R. Kahn (Kahn) appeals the judgment of the United Stated District Court for the Southern District of New York that Claims 53 and 54 of U.S. Patent No. 4,018,994 (the '994 patent) are invalid and not infringed by General Motors Corporation (GM). *See Kahn v. General Motors Corp.*, No. 88-CV-2982, 1997 WL 37581 (S.D.N.Y. Jan. 29, 1997). We affirm-in-part and reverse-in-part.

HISTORY OF THE CASE

Kahn filed an action in the United States District Court for the Southern District of New York on April 29, 1988 alleging that GM's AM stereo radio receivers infringed Claims 53 and 54 of the '994 patent. After nine years of

litigation and twelve judicial opinions,[1] including three appeals to this court,[2] it appears that this litigation may have finally reached a conclusion. The most recent installment of this case was argued before this court on November 5, 1997.

BACKGROUND[3]

A. The '994 Patent

Kahn's patent application was filed May 2, 1975. The '994 patent, entitled "Compatible AM Stereophonic Receiv-

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[1] *Kahn v. General Motors Corp.*, 77 F.3d 457, 38 USPQ2d 1063 (Fed. Cir. 1996); *Kahn v. General Motors Corp.*, 64 F.3d 675 (Fed. Cir. 1995 (table, text at 1995 WL 492970); *Kahn v. General Motors Corp.*, 889 F.2d 1078, 12 USPQ2d 1997 (Fed. Cir. 1989); *Kahn v. General Motors Corp.*, No. 88-CV-2982, 1997 WL 37581 (S.D.N.Y. Jan. 29, 1997); *Kahn v. General Motors Corp.*, No. 88-CV-2982, 1995 WL 2135, 33 USPQ2d 2011 (S.D.N.Y. Jan 3, 1995); *Kahn v. General Motors Corp.*, 865 F. Supp 210, 33 USPQ2d 1660 (S.D.N.Y 1994); *Kahn v. General Motors Corp.*, No. 88-CV-2982, 1993 WL 128014 (S.D.N.Y. Apr. 19, 1993); *Kahn v. General Motors Corp.*, No. 88-CV-2982, 1993 WL 119798 (S.D.N.Y. Apr. 13, 1993); *Kahn v. General Motors Corp.*, No. 88-CV-2982, 1992 WL 208286 (S.D.N.Y. Aug. 14, 1992); *Kahn v. General Motors Corp.*, No. 88-CV-2982, 1992 WL 28119 (S.D.N.Y. Feb. 11, 1992); *Kahn v. General Motors Corp.*, No. 88-CV-2982, 1991 WL 243387 (S.D.N.Y. Nov. 12, 1991); *Kahn v. General Motors Corp.*, 707 F. Supp. 683 (S.D.N.Y 1989).

[2] *Kahn v. General Motors Corp.*, 77 F.3d 457, 38 USPQ2d 1063 (Fed. Cir. 1996); *Kahn v. General Motors Corp.*, 64 F.3d 675 (Fed. Cir. 1995) (table, text at 1995 WL 492970); *Kahn v. General Motors Corp.*, 889 F.2d 1078, 12 USPQ2d 1997 (Fed. Cir. 1989).

[3] In its opinion, *Kahn v. General Motors Corp.*, No. 88-CV-2982, 1997 WL 37581 (S.D.N.Y. Jan 29, 1997), the district court fully expounds on the technological and historical background surrounding the invention and accused device at issue. Provided here is that background necessary to understand the disposition of the issues on appeal.

ers'', subsequently issued on April 19, 1977.[4] The claimed invention addresses the problem of minimizing the distortion within an AM stereo receiver. The Kahn receiver is designed to receive transmissions in which the two stereo audio signals, the left (L) and right (R) signals, are transmitted by an independent single sideband system. The information is encoded by envelope or amplitude modulation of the carrier wave by the stereo sum (L+R) signal component. According to the specification of the '994 patent, the most important feature of this invention is that the receiver derives a distortion cancellation component from the L+R signal and its higher harmonics and uses it to inversely amplitude modulate the stereo difference (L-R) signal. The substantially reduces the distortion of the L-R signal caused by amplitude modulation of the carrier wave. The concept is embodied in Claims 53 and 54 of the '994 patent, which read as follows:

> 53. In a compatible AM stereo receiver of the type for receiving a carrier wave amplitude modulated with a stereo sum (L+R) signal component and phase modulated with a stereo difference (L-R) signal component, and utilizing detection means for deriving the L+R audio signal and demodulating means for deriving the L-R audio signal and means for combining the L+R and L-R signals to isolate the L and R signal outputs, the improvement comprising:
>
> *means for deriving a distortion cancellation component from the stereo sum signal component, and*
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> means for combining said distortion cancellation component with a signal including the stereo difference signal component information to substantially reduce distortion of the stereo difference signal component.

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[4] In 1996, this court affirmed the judgment of the District Court for the Southern District of New York that Kahn was the sole owner of the '994 patent. *See Kahn v. General Motors Corp.*, 77 F.3d 457, 459 (Fed. Cir. 1996).

54. A receiver according to claim 53, wherein said means for deriving the distortion cancellation component comprises means separating a portion of the L+R audio signal, and said means for combining the separated distortion cancellation component with said signal including the stereo difference signal component information comprises means inversely amplitude modulating the modulated carrier wave with such L+R audio signal portion prior to demodulation thereof.

(emphasis added)

B. The Accused Device

Simple quadrature modulation is often used to encode and transmit a stereo signal to compatible quadrature receivers. Quadrature modulation essentially involves the transmission of two AM signals on the same channel. This allows both the "left" speaker signal and the "right" speaker signal to be transmitted together on the same channel. Before transmission, the L+R and L-R signals are phase shifted relative to one another and combined into a single signal, which is then transmitted to a receiver. The receiver is able to decode this combined signal into its components and present a stereo signal at the speakers.

The accused Compatible Quadrature Amplitude Modulated (C-QUAM) device works in a similar manner. The signal created by quadrature amplitude modulation, however, is not compatible with monophonic AM radio receivers, which cannot decode the quadrature modulated signal, but can only detect envelopes. Therefore, at the transmitter, the C-QUAM system first normalizes the signal so that it can be decoded by standard monophonic AM circuitry. To ensure that these monophonic receivers can also properly derive a monophonic signal from the stereo transmission, the C-QUAM system multiplies the L+R and L-R signals by the

cosine of the phase angle ($\cos(\phi)$) between the two signals to make the signal compatible with standard AM radio receivers. This adjusts the envelope of the quadrature signal to make it compatible with standard monophonic AM radio receivers, which can then interpret the signal as a monophonic signal without having to decode the C-QUAM stereo signals. The resulting L+R and L-R signals are also phase shifted relative to one another in the transmitter. The C-QUAM transmission is in effect the hypotenuse of the triangle created by the $(L+R)*\cos(\phi)$ and $(L-R)*\cos(\phi)$ signal vectors. Upon reception of a quadrature signal by a C-QUAM receiver, the $\cos(\phi)$ signal is recovered by comparing the envelope to a portion of the quadrature signal. The received C-QUAM signal is then divided by $\cos(\phi)$ to restore the L+R and L-R signals to their original form. These stereo signals can then be demodulated and sent to the speakers.

Kahn claims that the Motorola circuit used in the GM C-QUAM receivers derives a distortion cancellation component from the L+R signal and uses it to inversely modulate the L-R signal to substantially reduce the distortion in the L-R signal as claimed in Claims 53 and 54 of the '994 patent.

LITERAL INFRINGEMENT

In determining whether there has been infringement, a two step analysis is required. First, the claims must be correctly construed to determine the scope of the claims. Second, the claims must be compared to the accused device. *See Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 976, 34 USPQ2d 1321, 1326 (Fed. Cir. 1995) (in banc), *aff'd*, 116 S. Ct. 1384, 38 USPQ2d 1461 (1996); *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1581-82, 39 USPQ2d 1573, 1576 (Fed. Cir. 1996); *Hormone Research Found., Inc. v. Genentech, Inc.*, 904 F.2d 1558, 1562, 15 USPQ2d 1039, 1042 (Fed. Cir. 1990). To establish literal

infringement, a plaintiff must demonstrate that every limitation in the claim is literally met by the accused device. *See Intellicall, Inc. v. Phonometrics, Inc.*, 952 F.2d 1384, 1388-89, 21 USPQ2d 1383, 1387 (Fed. Cir. 1992); *see also Key Mfg. Group, Inc. v. Microdot, Inc.*, 925 F.2d 1444, 1449, 17 USPQ2d 1806, 1810 (Fed. Cir. 1991). Demonstration that every limitation of the claim is literally met by the accused device must be shown by a preponderance of the evidence. *See Envirotech Corp. v. Al George, Inc.*, 730 F.2d 753, 758, 221 USPQ 473, 477 (Fed. Cir. 1984).

A. Claim Construction

Claim construction is a matter of law and is reviewed by this court *de novo*. *Markman*, 52 F.3d at 974. Claim 53, the only independent claim at issue in this appeal, is written in means-plus-function language as permitted by 35 U.S.C. § 112, para. 6. Claims written in means-plus-function form are interpreted to cover the structure set forth in the specification and its equivalents. *See* 35 U.S.C. § 112, para. 6; *Intellicall*, 952 F.2d at 1388; *In re Iwahashi*, 888 F.2d 1370, 1375, 12 USPQ2d 1908, 1912 (Fed. Cir. 1989). The only claim limitation at issue in this appeal is the limitation in Claim 53, which requires "means for deriving a distortion cancellation component from the stereo sum signal component." The district court found that the parties had stipulated that the proper construction of the term "deriving" was "getting something from something else." *Kahn*, 1997 WL 37581, at *5. Kahn does not appeal this finding. We therefore adopt this interpretation of the term "derive".

Unlike the ordinary situation in which claims may not be limited by functions or elements disclosed in the specification, but not included in the claims themselves, in writing a claim in means-plus-function form, a party is limited to the corresponding structure disclosed in the specification and its equivalents. *See* 35 U.S.C. § 112, para. 6.

A structure disclosed in the specification is only deemed to be "corresponding structure" if the specification clearly links or associates that structure to the function recited in the claim. *See B. Braun Med., Inc. v. Abbott Lab.*, 124 F.3d 1419, 1424, 43 USPQ2d 1896, 1900 (Fed. Cir. 1997). The duty to link or associate structure in the specification with the function is the *quid pro quo* for the convenience of employing § 112, para. 6. *See O.I. Corp. v. Tekmar Co.*, 115 F.3d 1576, 1583, 42 USPQ2d 1777, 1782 (Fed. Cir. 1997).

There is sufficient structure disclosed in the '994 patent associated with the claim limitations. Kahn points to the structure associated with each limitation of Claim 53. Kahn claims that the limitation requiring "means for deriving a distortion cancellation component from the stereo sum signal component" is found in Figures 1, 2 and 3 and is labeled therein as parts 40, 44, 54, 54' and 96'. Kahn also claims that this limitation is disclosed in the specification of the '994 patent at column 5, lines 1 to 13. Turning to the Figures 1, 2 and 3 of the specification of the '994 patent, the above mentioned references disclose that part 40 refers to an amplifier, part 44 refers to a summer, and part 54 refers to a frequency doubler. Parts 54' and 96' also refer to frequency doublers in alternative embodiments of the claimed invention. Column 5, lines 1 to 13 of the written description disclose that the output from the envelope detector (L+R) is fed into the amplifier 40 and is summed together (along with the output from the frequency doubler 54) by the summer 44. The resulting summed signal is used to inversely amplitude modulate the stereo difference signal (L-R) to reduce distortion. The specification discloses a method for feeding the L+R signal and its higher harmonics taken from the frequency doubler to an inverse modulator, which then is used to eliminate the distortion caused by the amplitude modulation of the carrier wave. Kahn claims that the feed-

back circuit used in the GM receiver is an equivalent of the above described structure. We disagree with this characterization.

B. Comparison of the Claims to the Accused Device

Literal infringement of a claim exists when every limitation recited in the claim is found in the accused device. *See Strattec Security Corp. v. General Automotive Specialty Co.*, 126 F.3d 1411, 1418, 44 USPQ2d 1030, 1036 (Fed. Cir. 1997); *Johnston v. IVAC Corp.*, 885 F.2d 1574, 1580, 12 USPQ2d 1382, 1384 (Fed. Cir. 1989) (collecting cases). The district court found that Kahn failed to sustain his burden of proving that the GM system embodies every element of Claim 53 because he did not show that the GM circuit included "means for deriving a distortion cancellation component from the stereo sum signal component." *Kahn*, 1997 WL 37581, at *3. For the same reasons, the district court also found that the GM circuit did not infringe dependent Claim 54.

The feedback circuit used in the GM receiver consists of an envelope detector, a comparator and an inverse modulator. The comparator uses as one input the output from an envelope detector, or the L+R signal. On the other input is the output from the demodulator, which is the L+R signal plus the cos(ϕ) signal. The output from the comparator is the cos(ϕ) signal, which is connected to the inverse modulator and is used to inverse modulate the input signal to remove the cos(ϕ) signal.

Kahn also claims that part of the distortion cancellation signal in Claim 53 is an element of background noise derived from the L+R signal. This background noise is used to reduce or eliminate the background noise present in the L-R signal. Kahn claims that the accused device also uses the background noise derived from the L+R signal to reduce the distortion caused by background noise in the L-R signal.

Kahn is incorrect. To the extent that the background noise is derived from the L+R signal, the noise is eliminated by the comparator, which uses the exact same L+R signal including background noise to isolate the cos(ϕ) signal from the L+R signal. The background noise is therefore present on both inputs to the comparator, and each cancels the other from the signal, leaving the cos(ϕ) signal as the sole input to the inverse modulator.

Despite Kahn's claim that the feedback system used in the GM circuit is the feedforward equivalent of the structure disclosed in the '994 patent, there are significant differences between the two structures. The structure of the '994 patent includes a frequency doubler, which has no counterpart equivalent in the GM receiver that performs a similar function. Likewise, the summer described in the '994 specification has no counterpart in the GM circuit. It is clear that the GM feedback circuit employing a comparator is not an equivalent to the amplifier, frequency doubler, summer combination disclosed in the '994 specification. These two circuits utilize very different structures, for different purposes. As a result, we hold that there is no counterpart equivalent structure in the accused device that meets the means-plus-function limitation of Claim 53, which requires "means for deriving a distortion cancellation component from the stereo sum signal component."

The absence of even a single limitation of Claim 53 from the accused device precludes a finding of literal infringement. *See Key Mfg.*, 925 F.2d at 1449. Because a limitation contained in Claim 53 is not met by the accused device, Claim 53 is not literally infringed. Similarly, because Claim 54 contains limitations not contained in Claim 53, Claim 54 is narrower than Claim 53 and is therefore also not infringed by the accused device.

DOCTRINE OF EQUIVALENTS

Kahn also claims that the GM circuit infringes under the doctrine of equivalents. Under the doctrine of equivalents, an accused device "that does not literally infringe upon the express terms of a patent claim may nonetheless be found to infringe if there is 'equivalence' between the elements of the accused product or process and the claimed elements of the patented invention." *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 117 S. Ct. 1040, 1045, 41 USPQ2d 1865, 1868 (1997); *see also Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S. 605, 608 (1950); *Pennwalt Corp. v. Durand-Wayland, Inc.*, 833 F.2d 931, 934, 4 USPQ2d 1737, 1739 (Fed. Cir. 1987) (in banc).

The district court found that the GM circuit was substantially different from the system claimed in Claims 53 and 54. *See Kahn*, 1997 WL 37581, at *4. We review a decision of infringement under the doctrine of equivalents by a district court for clear error. *See Pennwalt*, 833 F.2d at 936. We agree with the district court that the accused device is not an equivalent of the claimed invention and does not infringe under the doctrine of equivalents. The record before us is devoid of any evidence that would support a finding that the limitations specified in the claim that are not found exactly in the accused device are met by equivalents in the accused device. In fact, it is clear from the record that the accused device performs a substantially different function in a different way to achieve an entirely different result.

The doctrine of equivalents is applied to each individual element of a claim, not to the invention as a whole. *See Warner-Jenkinson*, 117 S. Ct. at 1049. Focusing on the individual elements of Claim 53, it is clear that the function of the limitation in Claim 53 which requires "means for deriving a distortion cancellation component from the stereo sum signal component" is to reduce distortion in the input

signal. Kahn claims that the comparator and other related components in the accused device correspond to this claim element. However, these components function not to reduce distortion in the input signal, but to remove the cos(ϕ) signal in order to recover the original L-R signal. These are not substantially equivalent functions. The "means for deriving" limitation of Claim 53 functions to reduce distortion caused by amplitude modulation, while the comparator and related components in the accused device enable the circuit to remove an unnecessary signal added merely for backwards compatibility with existing systems.

The limitation in Claim 53 requiring "means for deriving a distortion cancellation component from the stereo sum signal component" also uses a significantly different structure to accomplish its function. As stated above, the amplifier, frequency doubler, summer combination which define the "means for deriving" are significantly different from the feedback structure of the accused device, which employs a comparator. The way these elements accomplish their respective functions cannot be said to be substantially the same.

Finally, the result is substantially different. The result of the structure defined by the "means for deriving" limitation in Claim 53 is the reduction of distortion in the input signal. The result of the allegedly equivalent structure in the accused GM circuit is merely the elimination of the cos(ϕ) component of the input signal. The L+R signal plays no part in the inverse modulation of the L-R signal as it is completely eliminated by the comparator, which outputs only the cos(ϕ) signal.

For the foregoing reasons, the above described structure of the GM circuit cannot be considered an equivalent to that disclosed in the specification of the '994 patent corresponding to the limitation in Claim 53 requiring "means for deriv-

ing." As a result, there can be no infringement under the doctrine of equivalents.

PATENT VALIDITY

The district court found Claims 53 and 54 of the '994 patent invalid under 35 U.S.C. § 103 (1994) as obvious over U.S. Patent No. 2,420,230 issued to Crosby on May 6, 1947, (the Crosby patent) and U.S. Patent No. 3,080,453 issued to Avins on March 5, 1963, (the Avins patent). *See Kahn*, 1997 WL 37581, at *7. The Avins patent, but not the Crosby patent, was before the examiner during the prosecution of the '994 patent. The district court based its finding in large part upon the expert testimony proffered by GM. Because the Avins patent combined with the Crosby patent would not have made using the envelope signal with the addition of higher harmonics of the envelope signal obvious to one of ordinary skill in the art, we reverse the decision of the district court.

A. Standard of Review

When a district court holds a patent invalid for obviousness, we review the ultimate legal conclusion as a matter of law *de novo*. *See Stiftung v. Renishaw PLC*, 945 F.2d 1173, 1182, 20 USPQ2d 1094, 1102 (Fed. Cir. 1991). However, re review the underlying factual findings such as differences between the prior art and the claimed invention, the level of ordinary skill in the art, and objective evidence of secondary considerations of patentability for clear error. *See id.* "A finding is 'clearly erroneous' when although there is evidence to support it, the reviewing court on the entire evidence is left with the definite and firm conviction that a mistake has been committed." *United States v. United States Gypsum Co.*, 333 U.S. 364, 395 (1948).

B. Prior Art

GM argued, and the district court found, that Claims 53 and 54 were invalid because they would have been obvious in light of the Avins and Crosby references. *See Kahn*, 1997 WL 37581, at *6. The record clearly supports the district court's finding that Kahn admitted in his deposition that each element in the preamble of Claim 53 could be found within the Avins patent. We turn now to the teachings of the Crosby patent, which was issued almost thirty years before the '994 patent issued.

The Crosby patent teaches the use of a distortion correction signal derived from the envelope signal to inversely modulate the phase modulated component of the input signal in order to eliminate some of the distortion that inevitably occurs as the signal is recovered from the envelope. The Crosby patent is essentially directed towards a process for reducing the distortion caused to an FM signal by an AM envelope. The specification of the Crosby patent discloses that, by using inverse modulation, the limiter often used to eliminate the AM envelope can be dispensed with because the elimination of amplitude modulation by the balanced detector is made more complete. Essentially, the Crosby system modulates the envelope in inverse proportion to the envelope amplitude. In so doing, the Crosby system reduces the amplitude of the envelope when it is at a high point and amplifies the amplitude of the envelope when it is at a low point. The Crosby patent states that "[t]he inverse modulation . . . opposes the undesired amplitude modulation which is present, and tends to cancel it." (Crosby, col 2, ll. 29-32). As a result, the envelope is more completely eliminated without the need to use a limiter. The Crosby patent teaches that a better alternative to using a limiter to eliminate the L+R envelope is to inversely modulate the envelope using the envelope signal itself.

C. Discussion

Under 35 U.S.C. § 103, "[a] patent may not be obtained . . . if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." The determination under section 103 is whether the claimed invention as a whole would have been obvious to a person of ordinary skill in the art at the time the invention was made. *See in re O'Farrell*, 853 F.2d 894, 902, 7 USPQ2d 1673, 1680 (Fed. Cir. 1988). Obviousness may not be established using hindsight. *See W.L. Gore & Assocs., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1551, 220 USPQ 303, 312-13 (Fed. Cir. 1983). In determining obviousness, the invention must be considered as a whole and the claims must be considered in their entirety. *See Medtronic, Inc. v. Cardiac Pacemakers, Inc.*, 721 F.2d 1563, 1567, 220 USPQ 97, 101 (Fed. Cir. 1983). An issued patent is presumed to be valid and, hence, nonobvious. *See* 35 U.S.C. § 282 (1994). Thus, in this case, it is GM's burden to prove by clear and convincing evidence that the claimed invention would have been obvious in view of the prior art. *See Glaverbel Societe Anonyme v. Northlake Mktg. & Supply, Inc.*, 45 F.3d 1550, 1555, 33 USPQ2d 1496, 1499 (Fed. Cir. 1995); *see also Polaroid Corp. v. Eastman Kodak Co.* 789 F.2d 1556, 1558, 229 USPQ 561, 562-63 (Fed. Cir. 1986). The presentation of evidence that was not before the examiner does not change the presumption of validity, although the burden may be more or less easily carried because of the additional evidence. *See Applied Materials, Inc. v. Advanced Semiconductor Materials Am., Inc.*, 98 F.3d 1563, 1569, 40 USPQ2d 1481, 1485 (Fed. Cir. 1996).

Kahn agreed in his deposition that the Avins patent teaches every limitation of Claim 53 except the limitation that

requires "means for deriving a distortion cancellation component from the stereo sum signal component." As we noted above, Claim 53 is written in means-plus-function form pursuant to 35 U.S.C. § 112, para. 6. Means-plus-function claims are limited to the structure disclosed in the specification and "equivalents thereof." 35 U.S.C. § 112, para. 6. The specification of the '994 patent clearly discloses a structure that isolates the L+R-envelope signal and uses the envelope signal to inversely modulate the L-R signal to reduce distortion. This is clearly disclosed by the Crosby patent. However, as we discussed above, the structure shown in the specification of the '994 patent also discloses a frequency doubler and a summer, which are used to add higher harmonics to the original envelope signal. The claim is limited to this structure as well. Indeed, one of the bases for the finding of noninfringement of the accused device was the limitation of the claim to a structure for including higher harmonics of the L+R signal in the distortion cancellation component. "It is insufficient to establish obviousness that the separate elements of the invention existed in the prior art, absent some teaching or suggestion, in the prior art, to combine the elements." *Arkie Lures, Inc. v. Gene Larew Tackle, Inc.*, 119 F.3d 953, 957, 43 USPQ2d 1294, 1297 (Fed. Cir. 1997). The district court erred in failing to limit Claim 53 to the structure in the '994 specification for adding higher frequency components to the distortion cancellation signal. Such a limitation precludes a finding of obviousness based on the combination of the Avins and Crosby patents.

Crosby clearly discloses the use of the envelope signal to eliminate distortion in the L-R signal. This limitation is not present or suggested by either the Avins patent or the Crosby patent. There is nothing in the prior art that discloses that the use of higher harmonics to reduce distortion would be desired or even useful to reduce the distortion in the L-R signal.

As discussed above, the Crosby invention used only the L+R envelope signal to eliminate the effects of amplitude modulation by the transmitter. The purpose of inverse modulation in the Crosby patent is to cancel the L+R envelope as completely as possible. There is nothing in the Crosby patent to suggest to one of ordinary skill in the art that doubling the frequency of the envelope and adding it to the distortion cancellation component would improve the noise characteristics of the resulting signal. Hence, it would not have been obvious to one of ordinary skill in the art to add higher harmonics to the Avins-Crosby combination to achieve the result of Claim 53.

GM has not proven by clear and convincing evidence that the invention defined by Claim 53 would have been obvious to one of ordinary skill in the art. As a result, we find that the district court erred in finding that the claimed invention would have been obvious over the combination of Avins and Crosby. Similarly, because Claim 54 depends from Claim 53, the invention defined by Claim 54 also would not have been obvious in light of the prior art. Accordingly, the judgment of the district court with respect to the validity of Claims 53 and 54 of the '994 patent is reversed.

CONCLUSION

We hold that the accused device does not literally infringe either Claim 53 or 54 because the accused device does not contain an exact or equivalent structure to that disclosed in the specification of the '994 patent. The functions and structure of each circuit are so different that there is no equivalency under the doctrine of equivalents. We also hold that the invention of Claims 53 and 54 of the '994 patent would not have been obvious based on the combination of the Avins and Crosby patents because the combination of Avins and Crosby would not have taught one of ordinary skill in the art to utilize a structure for adding higher har-

monics to the distortion cancellation signal. The judgment of the district court is affirmed with respect to its finding of noninfringement and reversed with respect to its finding that the invention of Claims 53 and 54 would have been obvious based on the prior art.

AFFIRMED-IN-PART and REVERSED-IN-PART

APPENDIX B

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

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88 Civ. 2982 (HB)

LEONARD R. KAHN,

Plaintiff,

-against-

GENERAL MOTORS CORPORATION,

Defendant.

Appearances:

For plaintiff:

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DECISION AND ORDER

HAROLD BAER, JR., District Judge:

Plaintiff Leonard R. Kahn brought this action alleging that defendant General Motors Corporation ("GM") infringed claims 53 and 54 of U.S. Patent No. 4,018,994 (the " '994 patent") and committed various state law torts. GM counterclaimed for a declaratory judgment that claims 53 and 54 of the '994 patent are invalid. Prior to trial, Kahn withdrew all of his tort claims with prejudice. A nonjury trial was held in April 1996. This Decision and Order constitutes the Court's findings of fact and conclusions of law. Fed. R. Civ. P. 52(a). For the reasons that follow, I find that Kahn failed to prove the GM receivers infringed the '994 patent and that GM proved that claims 53 and 54 of the '994 patent are invalid. Accordingly, the complaint is dismissed and claims 53 and 54 are declared invalid.

Background

The '994 patent, entitled "Compatible AM Stereophonic Receivers," issued to Kahn on April 19, 1977 from an application filed on May 2, 1975. The claimed invention addresses the problem of optimizing the quality of the output signal from a compatible AM stereo receiver. The term compatible refers to the radio transmission and means that the signal can be received by both monophonic and stereophonic receivers. A compatible AM stereo receiver is capable of receiving such radio transmissions.

The Kahn receiver is designed to receive transmissions where the two stereo audio signals, the left ("L") and right ("R") signals, are transmitted by an independent single sideband system. In such a system, the monophonic information is encoded by envelope or amplitude modulation of the carrier wave by the stereo sum ("L+R") component. The stereophonic information is encoded by phase modula-

tion of the carrier wave by the stereo difference ("L-R") component. The claimed inventive concept is that Kahn derives a distortion cancellation component from the L+R signal and uses it to inversely amplitude modulate the L-R signal and thereby substantially reduce the distortion of the L-R signal caused by incorrect amplitude modulation of the carrier wave.

Claims 53 and 54 of the '994 patent read:

> 53. In a compatible AM stereo receiver of the type for receiving a carrier wave amplitude modulated with a stereo sum (L+R) signal component and phase modulated with a stereo difference (L-R) signal component, and utilizing detection means for deriving the L+R audio signal and demodulating means for deriving the L-R audio signal and means for combining the L+R and L-R signals to isolate the L and R signal outputs, the improvement comprising:
>
> > means for deriving a distortion cancellation component from the stereo sum signal component, and
> >
> > means for combining said distortion cancellation component with a signal including the stereo difference signal component information to substantially reduce distortion of the stereo difference signal component.
>
> 54. A receiver according to claim 53, wherein said means for deriving the distortion cancellation component comprises means separating a portion of the L+R audio signal, and said means for combining the separated distortion cancellation component with said signal including the stereo difference signal component information comprises means inversely amplitude modulating the modulated carrier wave with such L+R audio signal portion prior to demodulation thereof.

The GM receivers utilize a Delco DM 235AM circuit that was developed by Motorola, Inc. as the Motorola MC 13020P AM Stereo Decoder circuit. This circuit is designed to receive a compatible quadrature modulated signal ("C-QUAM"). At the transmitter, the C-QUAM system first creates a quadrature modulated signal in which a carrier wave is amplitude modulated with the mono audio (L+R) signal and then phase modulated with the stereo audio (L-R) signal. The stereo and mono signal are encoded ninety degrees apart. Thus, the transmission is in effect the hypotenuse of the triangle created by the mono and stereo signal vectors.

This hypotenuse created by the quadrature modulation, however, is an incompatible signal. Therefore, Motorola utilized the cosine of the phase angle to make the signal compatible. The quadrature signal is multiplied by the cosine of the phase angle (cosine phi), which reduces its size and makes it compatible. At the receiver, cosine phi is recovered. The received signal is divided by cosine phi to restore it to its original form, and it is then demodulated. *See* Tr. at 464-70; DX 267. Kahn claims that the Motorola system used in GM receivers derives a distortion cancellation component from the L+R envelope fundamental and its harmonics that is used to inversely modulate the L-R signal and thereby substantially reduce distortion in accordance with the teaching of the '994 patent.

Discussion

I. Infringement

To establish infringement, a plaintiff must demonstrate that every limitation in the claim is met by the accused device either literally or by a substantial equivalent. *Intellicall, Inc. v. Phonometric, Inc.*, 952 F.2d 1384, 1389 (Fed. Cir. 1992); *Builders Concrete, Inc. v. Bremerton Concrete*

Products, Co., 757 F.2d 255, 257 (Fed. Cir. 1985). Infringement must be shown by a preponderance of the evidence. *Envirotech Corp. v. Al George, Inc.*, 730 F.2d 753, 758 (Fed. Cir. 1984).

In determining if there has been infringement, I must apply a two step analysis. First, I must determine the meaning and scope of the patent claims at issue. Second, I must compare the properly construed claims to the accused device. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 976 (Fed. Cir. 1995) (en banc), *aff'd*, 116 S. Ct. 1384 (1996).

Claim 53 is stated in means-plus-function language as provided for in 35 U.S.C. § 112, ¶ 6. Under § 112, "[a]n element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof." 35 U.S.C. § 112, ¶ 6. The Federal Circuit has held that "to satisfy a means-plus-function limitation literally, the accused device must perform the identical function required by the limitation and must incorporate the structure disclosed in the specification, or its substantial structural equivalent, as the means for performing that function." *Intellicall*, 952 F.2d at 1388-89; *see also Valmont Industries, Inc. v. Reinke Mfg. Co.*, 983 F.2d 1039, 1042 (Fed. Cir. 1993).

GM argues that the Delco circuit does not satisfy several of the elements in claim 53. As I find that the GM system does not include a "means for deriving a distortion cancellation component from the stereo signal component," I need not address the additional challenged limitations. Based on this factual finding, I conclude as a matter of law that Kahn failed to sustain his burden of proving that the

GM system embodies every element of claim 53. In addition, because claim 54 is dependent on claim 53, I conclude that Kahn has failed to prove infringement of that claim as well. *See Wahpeton Canvas Co. v. Frontier, Inc.*, 870 F.2d 1546, 1552 n.9 (Fed. Cir. 1989) ("One who does not infringe an independent claim cannot infringe a claim dependent on (and thus containing all the limitations of) that claim.").

First, I must interpret this claim limitation. "The terms in a claim are given their ordinary meaning to one of skill in the art unless it appears from the patent and file history that the terms were used differently by the inventor." *Intellicall*, 952 F.2d at 1387. Kahn defined "deriving" as "getting something from something else," Tr. at 238, and GM adopted this definition in its proposed conclusions of law. Accordingly, I adopt it as the stipulated construction.

Kahn stated at his deposition that, in general, distortion can be described as "unwanted changes of the wave form." Kahn Dep. Apr. 25, 1991, at 30. It is caused by incorrect envelope modulation. Tr. at 318. This error in the envelope modulation and waveshape, Kahn explained, causes distortion of the L-R audio signal that must be corrected. Tr. at 358. Kahn's claimed invention derives a component from the L+R signal that is used to cancel or correct the unwanted distortion of the L-R audio signal. Tr. at 240-41; 358. I adopt this reading of the claim limitation.

Kahn contends that GM derives a distortion cancellation component from the L+R audio component. Tr. at 283-90. He stated that a person of ordinary skill in the art would have a bachelor's degree in electrical engineering with five years of design experience. Tr. at 289, and that such a hypothetical person would find the feedback system used in the GM circuit to be equivalent to the structure disclosed in his '994 patent. Tr. at 286-89.

Kahn's claim fails because he did not prove that GM's circuit derives a distortion cancellation component from the L+R audio signal. Klein testified that the cosine phi signal is transmitted in the phase modulation component. Tr. at 470. In addition, Gregory J. Buchwald performed a demonstration showing the source of the cosine phi signal. Using an oscilloscope, he measured the L+R envelope modulation from the transmitter and the cosine phi signal at the receiver. After he cut off the envelope modulation signal at the transmitter, the cosine phi signal remained unchanged. From this, he concluded and I find that the cosine phi signal is not derived from the L+R signal; rather it is transmitted in and extracted from the phase modulated component. Tr. at 490-92, 496-99; DX 266.

Further, the structure used to obtain the cosine phi signal in the GM receiver is not the same or equivalent to the Kahn system. GM utilizes a comparator, which Kahn characterizes as a feedback system. A comparator is a device whose output is the difference between its two inputs. Tr. at 525; Kahn Apr. 25, 1991 Dep. at 144-45. In the GM circuit, the comparator measures the difference between the output of the envelope detector, which is the L+R signal, and the I, or in-phase, detector, which is the L+R signal plus the cosine phi signal. Tr. at 525-26; Kahn Dep. Apr. 25, 1991, at 144-45. The output of the comparator is cosine phi. Tr. at 526; Kahn Dep. Apr. 25, 1991, at 145.

At his deposition, Kahn testified that the comparator does not take anything from the output of the envelope detector. Rather, the envelope detector output is used only as a reference signal. Kahn Dep. April 25, 1991, at 158-59. Klein also testified that the comparator does not derive anything from the output of the envelope detector. Tr. at 526-27. Finally, Klein stated that the GM comparator circuit is not structurally equivalent to the summation circuit disclosed in the '994 patent. Tr. at 477.

I find the testimony of Klein and Buchwald and the Buchwald demonstration credible and persuasive and reject Kahn's contrary testimony. Accordingly, I find that the system does not derive a distortion cancellation component from the stereo sum signal and the GM circuit does not contain the structural equivalent of the circuitry disclosed in the '994 patent. Under the *Intellicall* standard, 952 F.2d at 1388-89, I conclude that Kahn has not proved literal infringement.

This finding also precludes Kahn's claim of infringement under the doctrine of equivalents. "Under the doctrine of equivalents, an accused product that differs from the claim, and thus does not literally infringe, nonetheless infringes if its difference from that claim is insubstantial from the perspective of one of ordinary skill in the art." *Athletic Alternatives, Inc. v. Prince Mfg., Inc.*, 73 F.3d 1573, 1581 (Fed. Cir. 1996); *see also Hilton Davis Chem. co. v. Warner-Jenkinson Co.*, 62 F.3d 1512, 1518 (Fed. Cir.), *cert. granted*, 116 S. Ct. 1014 (1996). However, the doctrine does not extend or enlarge the scope of patent claims and it cannot be used to ignore claim limitations. *Dolly, Inc. v. Spalding & Evenflo Co.*, 16 F.3d 394, 398 (Fed. Cir. 1994); *see also Athletic Alternatives*, 73 F.3d at 1582-83.

Kahn's claim under the doctrine of equivalents, however, fails because I have found that the GM circuit does not derive a distortion cancellation component from the L+R signal within the limitation of claim 53. The absence of this functional claim limitation, precludes a finding of infringement. *Dolly*, 15 F.3d at 398; *Valmont Industries*, 983 F.2d at 1455 n.2. I find that the GM receiver is substantially different from the system disclosed in the '994 patent, and accordingly I conclude that it does not infringe under the doctrine of equivalents.

II. Patent Validity

GM also seeks a declaratory judgment that claims 53 and 54 of the '994 patent are invalid. It argues that these claims are anticipated under 35 U.S.C. § 102, obvious under 35 U.S.C. § 103, and the specifications fail to satisfy the enablement requirement of 35 U.S.C. § 112.

The '994 patent, like all patents, is presumed valid. This presumption can only be overcome by clear and convincing evidence. *Bausch & Lomb, Inc. v. Barnes-Hind/Hydrocurve*, 796 F.2d 443, 446 (Fed. Cir. 1986), *cert. denied*, 484 U.S. 823 (1987); *Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 1459 (Fed. Cir. 1984).

A. Anticipation

Anticipation is one way to prove invalidity. The concept emerges from 35 U.S.C. § 102 where we read that a patent is invalid if "the invention was patented . . . in this or a foreign country . . . more than one year prior to the date of the application for patent in the United States." Anticipation requires the presence of every element in the claimed invention in a single prior art reference. *Lewmar Marine, Inc. v. Barient, Inc.*, 827 F.2d 744, 747 (Fed. Cir. 1987), *cert. denied*, 484 U.S. 1007 (1988); *American Hoist*, 730 F.2d at 1452. "That which would literally infringe if later in time anticipates if earlier than the date of the invention." *Lewmar Marine*, 827 F.2d at 747. "In deciding the issue of anticipation, the trier of fact must identify the elements of the claims, determine their meaning in light of the specification and prosecution history, and identify corresponding elements disclosed in the allegedly anticipating reference." *American Hoist*, 730 F.2d at 1458.

GM argues that claims 53 and 54 are anticipated by U.S. Patent No. 2,420,230 issued to Crosby on May 6, 1947 and

U.S. Patent No. 3,143,600 issued to De Vries on August 4, 1964. Klein gave extensive testimony that each element of claims 53 and 54 were found in both of these patents. Much of this testimony was endorsed by Jon Grosjean. Although I found this testimony persuasive and credible, I reject GM's anticipation claim.

Klein's conclusions as to anticipation were tied, properly, to the construction of the '994 patent. He testified that the '994 patent was anticipated if it was construed broadly enough to cover the GM receiver. *See* Tr. at 555, 607. However, he did not state that the '994 patent would be invalid if it received a narrower interpretation, such as I have given it here. Indeed, he testified that if the patent examiner had been aware of the Crosby patent, claims 53 and 54 might still have been allowed if they were given a narrow interpretation. Tr. at 542.

I find on this record that neither the Crosby nor the De Vries patents embody every element of claims 53 and 54 of the '994 patent. Accordingly, I conclude that GM has failed to prove by clear and convincing evidence that these claims are invalid under § 102.

B. Obviousness

The obviousness concept has its roots in 35 U.S.C. § 103, where we read that a patent is invalid if the claimed invention "would have been obvious to a person having ordinary skill in the art." In determining whether an invention was obvious, the Court must examine (1) the scope and content of the prior art; (2) the differences between the prior art and the claims at issue; (3) the level of ordinary skill in the art; and (4) objective evidence of secondary considerations. *Graham v. John Deer Co.*, 383 U.S. 1, 17-18 (1966); *Bausch & Lomb*, 796 F.2d at 447. The determination of obviousness must be made with reference to the hypothetical

person of ordinary skill in the art. *Id.* at 448. "When the references are all in the same or analogous fields, knowledge thereof by the hypothetical person of ordinary skill is presumed, and the test is whether the teachings of the prior art, taken as a whole, would have made obvious the claimed invention." *In re Gorman*, 933 F.2d 982, 986 (Fed. Cir. 1991) (citation omitted).

1. The Scope and Content of the Prior Art

"'The scope and content of the prior art has been defined as that reasonably pertinent to the particular problem with which the inventor was involved.'" *American Hoist*, 730 F.2d at 1460 (quoting *Stratoflex Inv. v. Aeroquip Corp.*, 713 F.2d 1530, 1535 (Fed. Cir. 1983)); *see also Bausch & Lomb*, 796 F.2d at 449. The problem facing Kahn was the design of a compatible AM stereo receiver that reduced distortion and thereby optimized output signal quality. I find that the relevant prior art includes the references cited in the '994 patent as well as other patents in the field of AM stereo receivers, including U.S. Patent No. 3,080,453 issued to Avins on March 5, 1963. D.X. 4. In addition, although it did not disclose a stereo receiver, I find that U.S. Patent No. 2,420,230 issued to Crosby on May 6, 1947 is pertinent because it discloses a receiver for carrier waves that have been both phase and amplitude modulated and a circuit designed to reduce distortion. D.X. 1; *see* Tr. at 545. Both the Crosby and Avins patents issued prior to Kahn's application which was filed on May 2, 1975.

2. The Differences Between the Claimed Invention and the Prior Art

In determining the differences between the claimed invention and the prior art, the Court must consider the claimed invention as a whole. *Bausch & Lomb*, 796 F.2d at 449; *American Hoist*, 730 F.2d at 1462. Where various elements

from more than one reference must be combined to form the claimed invention, "the question is whether there is something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination." *Id.; see also Gorman*, 933 F.2d at 986. "The problem confronted by the inventor must be considered in determining whether it would have been obvious to combine references in order to solve that problem." *Diversitech Corp. v. Century Steps, Inc.*, 850 F.2d 675, 679 (Fed. Cir. 1988). Finally, " '[t]he invention must be viewed not with the blueprint drawn by the inventor, but in the state of the art that existed at the time.' " *Id.* (quoting *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143 (Fed. Cir. 1985)).

Kahn testified at his deposition that each element in the preamble of claim 53 is found in the prior art, and more specifically, in the Avins '453 patent. Kahn Apr. 25, 1991 Dep. at 57; Kahn Apr. 26, 1991 Dep. at 248-51. At trial Klein testified that the '453 patent teaches the use of a dynamic limiter in an AM stereo receiver to reduce distortion of the L-R signal. Tr. at 546; D.X. 4. Crosby, on the other hand, teaches the use of a distortion correction signal derived from the envelope to inversely modulate the phase modulated component. Tr. at 538-41; D.X. 1. Klein stated that the Crosby patent is a substitute for a limiter. Tr. at 547, 604. Although Kahn disagreed, believing that Crosby really functions as a limiter, Klein's testimony is bolstered by the Crosby patent itself. D.X. 1 at col. 1, ll. 33-34 ("Hence, if desired, the limiter may be dispensed with . . . .").

Klein stated his opinion that it would have been obvious to a person skilled in the art to substitute the Crosby inverse modulator for the dynamic limiter in the Avins circuit. Tr. at 547. As he explained, this substitution would form the same circuit as that claimed in claims 53 and 54 of the '994 patent. Tr. at 549-50. Further, Klein opined that a person

skilled in the art and following the teachings of the Avins patent who encountered the "click and pop" problem that Kahn claims all limiters create, would have found it obvious to look to the Crosby patent for a limiter substitute. Tr. at 548-50.

I found Klein's testimony credible and persuasive. Although Klein testified that the Kahn system "was a unique and, in my view, very patentable invention," Tr. at 608, as GM's counsel argued and I recognized, this statement was directed at the overall system rather than the particular elements in claims 53 and 54. Based on Klein's testimony, the relevant exhibits, and to a more limited extent the credible testimony of Jon Grosjean, I conclude that the elements claimed in claims 53 and 54 of the '994 patent are readily formed by the combination of the Crosby and Avins patents. Further, the Crosby patent would have suggested to a person of ordinary skill in the art that inverse modulation using the envelope signal could be used instead of a limiter to reduce distortion of the phase modulated component of an AM stereo signal. *Cf. Gorman*, 933 F.2d at 986-87 ("The extent to which such suggestion must be explicit in, or may be fairly inferred from, the references, is decided on the facts of each case, in light of the prior art and its relationship to the applicant's invention.").

3. Level of Ordinary Skill in the Art

Kahn testified that a person of ordinary skill in the art would have a bachelor's degree in electrical engineering and five years of design experience. Tr. at 289. GM adopted this in its proposed findings. Accordingly, I find that this is the stipulated level of ordinary skill in the art.

4. Objective Evidence of Secondary Considerations

Evidence of secondary considerations that may indicate nonobviousness must always be considered. *Bausch &*

Lomb, 796 F.2d at 450. Such evidence includes commercial success, long felt but unresolved needs, failed attempts and copying. *Id.*; *Cable Elec. Prods. Inc. v. Genmark, Inc.*, 770 F.2d 1015, 1026-28 (Fed. Cir. 1985). However, before the Court may give substantial weight to the secondary considerations in determining obviousness, the patentee must establish a nexus between the claimed invention and the secondary considerations. *Id.* at 1026.

Here, Kahn introduced scant evidence of secondary considerations. He testified that he never found a patent that did not click and pop and did not infringe his patent. Further, he claimed that there was no AM stereo receiver in mass production that did not use his invention. Tr. at 252-54. This supports the proposition that his invention was commercially successful. However, in light of my finding that GM's receiver did not infringe upon the '994 patent, I do not find this testimony credible.

Based on the findings outlined above under the *Graham* analysis, I conclude that GM proved by clear and convincing evidence that a person of ordinary skill in the art at the time that Kahn developed his claimed invention would have found the disclosures in claims 53 and 54 of the '994 patent obvious. Accordingly, these claims are invalid under § 103.

C. Enablement

The first paragraph of 35 U.S.C. § 112 provides:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms at to enable any person skilled in the art to which it pertains . . . to make and use the same . . . .

This provision requires that the specification "enable one skilled in the particular art to use the invention without undue experimentation." *In re Goodman*, 11 F.3d 1046,

1050 (Fed. Cir. 1993). While some experimentation is acceptable, undue experimentation is not. *PPG Indus., Inc. v. Guardian Indus. Corp.*, 75 F.3d 1558, 1564 (Fed. Cir. 1996); *In re Wands*, 858 F.2d 731, 736-37 (Fed. Cir. 1988). "The key word is 'undue,' not 'experimentation.' " *Id.* (citation omitted).

GM contends that claims 53 and 54 are invalid because they do not enable a person of ordinary skill in the art to build the inverse modulator represented by box 28 in Fig. 1 of the '994 patent. Although Kahn admitted that some trial and error would be required to practice his invention, Tr. at 320, I find that GM did not prove by clear and convincing evidence that undue experimentation would be required. Accordingly, I conclude that claims 53 and 54 of the '994 patent are not invalid under § 112, ¶ 1.

III. Conclusion

For the reasons stated above, I find that plaintiff failed to prove infringement by a preponderance of the evidence and defendant proved that the '994 patent is invalid as obvious by clear and convincing evidence. Based on these findings, I need not reach defendant's argument that plaintiff's claim is barred by estoppel and laches. Finally, I conclude that this is not an exceptional case under 35 U.S.C. § 285. Defendant's request for attorneys' fees is denied.

The Clerk of the Court is directed to enter judgment for the defendant dismissing the complaint and finding U.S. Patent No. 4,018,994 invalid.

SO ORDERED

Dated: New York, New York
January 27, 1997

/s/ Harold Baer, Jr.
U.S.D.J.

APPENDIX E

United States Court of Appeals for the Federal Circuit

ORDER

A combined petition for rehearing and suggestion for rehearing en banc having been filed by the APPELLANT, and the petition for rehearing having been referred to the panel that heard the appeal, and thereafter the suggestion for rehearing en banc having been referred to the circuit judges who are in regular active service.

UPON CONSIDERATION THEREOF, it is

ORDERED that petition for rehearing be, and the same hereby is, DENIED and it is further

ORDERED that the suggestion for rehearing en banc be, and the same hereby is, DECLINED.

The mandate of the court will issue on February 9, 2000.

Circuit Judge CLEVENGER did not participate in the vote.

FOR THE COURT,
/s/ Jan Horbaly
Clerk

Dated: February 2, 2000

FILED

cc: Sidney Bender
Linda S. Resh

U.S. COURT OF APPEALS
FOR THE FEDERAL CIRCUIT
FEB - 2 2000
Jan Horbaly, Clerk

KAHN V GENERAL MOTORS CORP, 99-1335
(DCT - 88-CV-2982)

Note: Pursuant to Fed. Cir. R. 47.6, this order is not citable as precedent. It is a public record.

APPENDIX F

United States Court of Appeals for the Federal Circuit

99-1335

LEONARD R. KAHN,

Plaintiff-Appellant

v.

GENERAL MOTORS CORPORATION,

Defendant-Appellee

JUDGMENT

ON APPEAL from the	United States District Court for the Southern District of New York
In CASE NO(S)	88-CV-2982

This CAUSE having been heard and considered, it is

ORDERED AND ADJUDGED AFFIRMED

ENTERED BY ORDER OF THE COURT

Dated: December 14, 1999 /s/ Jan Horbaly, Clerk

ISSUED AS A MANDATE: FEBRUARY 9, 2000

APPENDIX G

UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

ORDER

A combined petition for rehearing and suggestion for rehearing in banc having been filed by the APPELLANT, and the petition for rehearing having been referred to the panel that heard the appeal, and thereafter the suggestion for rehearing in banc having been referred to the circuit judges who are in regular active service,

UPON CONSIDERATION THEREOF, it is

ORDERED that the petition for rehearing be, and the same hereby is, DENIED and it is further

ORDERED that the suggestion for rehearing in banc be, and the same hereby is, DECLINED.

The mandate of the court will issue on April 2, 1998.

FOR THE COURT,
JAN HORBALY, CLERK

Dated: March 26, 1998

By /s/ Alex Van Veen AMT
Alex Van Veen
Staff Law Clerk

cc: LEONARD R. KAHN
ROBERT F. KRUPKA

KAHN V GENERAL MOTORS CORPORATION, 97-1277
(DCT - 88-CV-2982)

Note: Pursuant to Fed. Cir. R. 47.6, this order is not citable as precedent. It is a public record.

APPENDIX H

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

_____x

Leonard R. Kahn,
Plaintiff,

88 CIVIL 2982(HB)

against

JUDGMENT

General Motors Corp.,
Defendant.

_____x

Whereas the above-entitled action having been brought on for a nonjury trial on April 1, 1996 before the Honorable Harold Baer, United States District Judge, and decision having been reserved, and the court on January 27, 1997 having issued its Decision and Order, dismissing the complaint and finding that plaintiff failed to prove the GM radio receivers infringed the '994 patent and that GM proved that claims 53 and 54 of the '994 patent are invalid, it is,

ORDERED, ADJUDGED AND DECREED: That for the reasons stated in the Court's Decision and Order dated January 27, 1997, Leonard R. Kahn having failed to prove the GM radio receivers infringed the '994 patent and that GM proved that claims 53 and 54 of the '994 patent are invalid, the complaint is dismissed and claims 53 and 54 are declared invalid.

DATED: New York, New York January 31, 1997
JAMES M. PARKISON:

APPENDIX I

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF NEW YORK

ORAL HEARING REQUESTED

88 Civ. 2982
Judge Harold Baer, Jr.

NOTICE OF MOTION

PLEASE TAKE NOTICE that on June ___, 1998 at 9:00 a.m., or as soon thereafter as the plaintiff may be heard, he shall appear before the Honorable Harold Baer, Jr. in the courtroom usually occupied by him in the United States Courthouse, 500 Pearl Street, New York, New York and present the plaintiff's Motion to Set Aside Judgment and Request For Expedited Consideration, a copy of which is hereby served upon you.

DATED: June 12, 1998

Respectfully submitted,

Leonard R. Kahn, Pro se
320 East 42nd Street
Mezzanine West
New York, New York 10017
(212) 983-6765

AFFIDAVIT OF WILLIAM RALPH BENNETT, JR.

State of Connecticut)
) ss:
County of New Haven)

William Ralph Bennett, Jr. duly sworn, deposes and says:

I am Professor of Physics and Applied Physics, and hold the Charles Baldwin Sawyer Chair in Engineering and Applied Science at Yale University and have conducted research in various fields of electrical engineering and been awarded a number of patents in the field, and I believe that I am qualified to offer the following opinions:

I have examined the following documents which I understand are in record before the Court in the nonjury trial of Leonard R. Kahn v. General Motors Corporation in April of 1996 in the U.S. District Court of New York, before the Honorable Judge
Harold Baer, Jr.:

U.S. Patent 4,018,994,...Appeal Appendix No. A43-53

GM Buchwald Demonstration Photographs... A2035

Block Diagrams of General Motors/Delco

AM Stereo radio receivers,... A884, 859, 1500
Motorola block of AM Stereo Transmitter... A858
Envelope of C-Quam & QUAM... A857, 1506
RCA/Crosby U.S. Patent 2,420,230,... A1020-1025

RCA/Avins U.S. Patent 3,080,453,... A1010-1018
Kahn 1953 Limiter Paper... A972-975
Sony Integrated Circuit... A891

I have also examined Mr. Minter's Affidavit of April 30, 1998. I have, during my review of this matter had in my possession the entire Appendix used in the appeal to the Federal Circuit. In the following I specifically refer to pages 485, 488, 489, 490-492, 496-499 of the April 1996 trial transcript.

I have been requested to comment on a test and certain important conclusions proffered the Court by Defendant General Motors ("GM") during the Kahn v. General Motors trial.

1) For the reasons detailed below, I have reached the following opinions:

a. GM's AM Stereo receivers as shown in diagrams A859, 884 & 1500 derive their distortion cancellation components from the stereo sum signal components.

b. GM's DX266 Demonstration is defective and GM's conclusions based on this Demonstration are erroneous because:

1. the test signal is not a stereo signal;

2. if the test was completed, the results prove infringement, not as GM argued, non-infringement;

3. and most troubling, the measurements that should have been provided as per any scientific test, were never provided to the Court.

Actually, it is my opinion that GM's DX266 Demonstration measurements fully support Kahn's position that the GM/Delco distortion correction circuit, which GM calls a decoder, derives its distortion cancellation component from the sum (L+R) signal component as per Claim 53 of the '994 Patent.

2) In considering this matter, I have concluded that the basic technical question raised in this litigation is whether or not GM's receivers derive their L-R stereo signal distortion correction from the L+R monophonic component, (the very strange concept taught in Kahn's '994 Patent), or does GM derive the correction from the L-R stereo difference component? A review of the transcript and Judge Baer's Opinion makes it clear that Buchwald's DX266 Demonstration was key to the finding of noninfringement. This demonstration purported to prove that GM's distortion circuit is not disabled or even altered by eliminating the L+R sum envelope signal which the '994 Patent teaches is to be used to provide the L-R distortion correction. This startling argument (in view of the electrical connections shown in GM's own block drawings, A884, 859, 1500) was offered without any theoretical support, and crucially, without any distortion measurements. I say "crucially," because it is inconceivable to me that any engineer, indeed any layman, would perform a decisive test of an alleged infringing distortion correction circuit for submission to a federal court without carefully making and recording distortion measurements.

3) In considering the DX266 Demonstration, my first step was to evaluate the test conditions of what purportedly was a demonstration of Compatible AM Stereophonic

operation. Without dwelling on the matter that has been accurately criticized in detail in Mr. Minter's Affidavit, I would just summarize the situation, that, from a mathematical information theory viewpoint the test signal is not "compatible" nor is it a "stereo" signal. It is a defective dual channel system, totally artificial. Not only is there insufficient information contained in the signal to provide the basic feature of stereo, the perception of location on the stereo stage, there is no information at all. The mathematics fully supports Mr. Minter's conclusions re the DX266 test signal.

4) I have examined the block diagrams of the GM distortion correction circuit, A859, (actually all three cited blocks A859, 884 & 1500 are functionally identical) and I find no connection from the only circuit which demodulates and produces the L-R component, the quadrature ("Q") demodulator and there is no electrical connection that would permit the distortion correction circuit to be controlled by the L-R demodulated wave. Absent such a connection, there is no physical mechanism that supports GM's conclusion that its distortion correction circuit is controlled by the L-R stereo difference component. And since the only other component available is the L+R sum signal component, and this circuit is shown to be connected, it is clear that the reference wave for GM's distortion correction circuit is, indeed, the L+R wave and not the L-R wave. Thus, GM's infringement defense, that it does not use the L+R sum signal to derive the distortion correction component, defies engineering logic.

5) However, even if one completely ignored the signal flow block diagrams, and no one would with a knowledge of electric circuit analysis (accepted worldwide throughout the long history of electrical engineering), there is physical evidence that provides independent proof that GM's Buchwald DX266 Demonstration is unsound. GM went to great efforts to demonstrate to the Court that when the

envelope modulation was removed from the signal that the distortion correction component remained absolutely constant. Indeed, they presented photographs that are in record (DX266) and to the eye one can see no trace of envelope modulation. (From my experience in university laboratories and in my own research work I can state that the eye is able to see even a 1% or 2% residual modulation when the oscilloscope is locked. I perceive none from the photographs. Therefore, I would judge that the circuits were balanced to something in the order of 50 db; i.e., in terms of power, 10 to the 5th power or 100,000 - great precision indeed.) The use of such precision confirms Mr. Minter's opinion that the DX266 Demonstration signal could not have been generated as the result of a mere accident. Minter Affidavit of 4/30/98, ¶14(b)

6) Continuing the additional proof, when the DX266 test signal is dramatically altered; i.e., the envelope modulation is reduced (eliminated) from 50% to zero modulation, the distortion correction wave must change to meet the new conditions. Since GM's own DX266 Demonstration proves that disabling the envelope modulation does not change the distortion correction wave, the distortion must change. If the correction signal does not change there is no physical basis or mechanism for making the necessary correction. Circuits follow strict logical mathematical laws. Clearly, the very fact that GM's Demonstration proved that the correction signal did not change proves that the distortion has to change. This, of course, is exactly what Mr. Minter proved by his distortion measurements, which went from 17% to 30%. QED

7) It may be useful to provide an analogy. Suppose someone carefully adjusted the carburetor of a car for optimum mileage at 60 miles per hour with a 2,000 pound loaded vehicle. Surely, if someone halved the vehicle's load that careful adjustment would no longer apply and if they

somehow reduced the load to close to zero it would even take a greater readjustment. And if the vehicle used a feedback circuit to provide the critical adjustment and then someone else cut the control wires so that the adjustment could not change, no one would expect optimum mileage. Clearly, GM's DX266 Demonstration is totally without merit.

8) As pointed out above, I have examined the Affidavit of Mr. Jerry B. Minter re the DX266 Demonstration, and while I have not repeated his laboratory measurements, such measurements are consistent with my analysis of the test. Conversely, in my opinion there is no support for GM's argument that the distortion correction component is not derived from the L+R sum signal. Indeed, any engineer with even a rudimentary background in feedback systems would recognize the reference signal is the L+R wave and it controls the distortion correction process.

9) Going beyond the DX266 Demonstration, I have also analyzed the question of whether one can determine from the documents that are of record whether or not GM's receivers incorporate distortion correction circuitry which derives its distortion cancellation component from the L+R sum signal. I have examined the block of GM's AM Stereo distortion correction circuit ("chip") as manufactured by Motorola and also the envelope modulation of the stereo wave it is designed to receive. That transmitted wave has to be able to closely approximate a fully modulated standard AM wave. For example, if a single tone sine wave is to be transmitted, the waveshape is as shown in Motorola's pre-litigation drawing of a wave with a sinusoidal envelope. (A857) But in order to avoid L-R distortion, the envelope of the wave fed to the quadrature demodulator (Q Demodulator) must have a much different waveshape as shown in the drawing. There are two very easily recognized differences in the two envelopes:

a) the envelope of the wave fed to the Q demodulator has much lower overall modulation, and

b) the waveshape of the wave is not sinusoidal and has very substantial harmonics of the L+R component.

Thus, one can readily recognize the function of the variable gain circuit and what it must do to the incoming wave. It must inversely modulate the received wave reducing the waves L+R modulation and it must also change its waveshape by using harmonics derived from the L+R sum signal component which appears at the output of the envelope detector. This further substantiates my opinion that GM's receivers derive their distortion correction from the L+R sum signal as per the '994 Patent.

10) Indeed, anyone familiar with such circuitry would recognize that the only function the variable gain circuit can perform when it is connected as per the drawings is to inversely modulate the received signal. Such engineers would also realize that GM's overall distortion cancellation circuit is the equivalent of the forward acting distortion circuit as disclosed in the '994 Patent and which defines the scope of claims 53 and 54. GM's and Motorola's engineers use of feedback in following the strange teachings of the '994 Patent would naturally use the feedback equivalent of forward acting distortion as integrated circuit designers of analog integrated circuits, the type of circuit used in GM's stereo receivers, almost universally use large amounts of feedback.

11) Sony in its AM Stereo integrated circuit, (A891), uses the forward acting distortion correction approach as disclosed in the '994 Patent. Conversely, GM/Motorola used a feedback version of the '994 invention. The advantage of

GM's use of feedback is that it automatically utilizes all of the significant harmonics, (taught in the '994 Patent as the preferred embodiment), while Sony apparently was satisfied with the less expensive fundamental only L+R correction. However, GM's circuit at least doubles the background ambient noise because of the use of two carrier components required, one feeding the I Demodulator and the other used with the Q Demodulator. This is a serious, but not disabling, weakness of the GM version as it at least halves the signal-to-noise ratio, which is most significant for reception in weak signal areas.

12) This brings me to another major point made in Mr. Minter's Affidavit re the Federal Circuit's Opinion of February 3, 1998, on page 12 that "the L+R component is completely eliminated by the comparator." If that was true the variable gain circuit could not reduce the L+R component of the envelope of the signal fed to the Q Demodulator. The output of the comparator must produce an L+R component to reduce distortion in the L-R component and the output of the comparator only produces the difference between the two inputs. If the two inputs had identical amounts of L+R and actually cancelled there would be no L+R component at the output of the comparator and the distortion correction could not function. The error difference is essential to feedback systems. Thus, the Court's opinion regarding the comparator's operation is technologically unsound, violating the very foundation of feedback theory.

Since the Court of Appeals for the Federal Circuit based its non-infringement opinion on clear engineering error, it is my opinion that its conclusion regarding the infringement issue is clearly erroneous William Ralph Bennett, Jr.

Sworn to before me this
_ of May 1998

KIRKLAND & ELLIS

July 13, 1998

VIA HAND DELIVER

The Honorable Harold Baer, Jr.

Re: Kahn v. General Motors Corporation, 88 Civ. 2982 (HB)

Dear Judge Baer:

General Motors submits this letter in accordance with the Court's instructions from the July 7, 1998 phone conference.

None of the conduct complained of by Mr. Kahn constitutes a fraud on the court. Fraud on the court should "embrace only that species of fraud which does or attempts to, defile the court itself, or is a fraud perpetrated by officers of the court so that the judicial machinery cannot perform in the usual manner its impartial task of adjudging cases that are presented for adjudication." *Kupferman v. Consolidated Research And Mfg. Corp.*, 459 F.2d 1072, 1078 (2nd Cir. 1972). Fraud on the court is confined to the "most egregious cases, such as bribery of a judge or juror, or improper influence exerted on the court by an attorney, in which the integrity of the court and its ability to function impartially is directly impinged." *Great Coastal Express, Inc., v. International Brotherhood of Teamsters*, 675 F.2d 1349, 1356 (4th Cir. 1982).

Mr. Kahn had the opportunity to challenge General Motors' demonstration, the DX266 exhibit, and Mr. Buchwald's testimony at trial and on appeal. The conduct about which Mr. Kahn complains occurred in open court, where Mr. Kahn was present. If Mr. Kahn believed that any fraud had occurred, he should have raised it then. No facts or information were hidden from Mr. Kahn or the Court and no misrepresentations were made. Mr. Kahn was not prevented from presenting at trial or on appeal any of the arguments that he now raises. Fraud on the court cannot occur where Mr. Kahn was afforded an opportunity for fair litigation of the dispute, because fraud on the court occurs only where the alleged fraud seriously affects the integrity of the normal process of adjudication. *Gleason v. Jandrucko*, 860 F.2d 556, 559 (2nd Cir. 1988)("In short, neither perjury nor nondisclosure, by itself, amounts to anything more than fraud involving injury to a single litigation."); *Great Coastal Express*, 675 F.2d at 1357 ("[p]erjury and fabricated evidence are evils that can and should be exposed at trial, and the legal system encourages and expects litigants to root them out as early as possible"), *cert. denied*, 459 U.S. 1128 (1983).

Mr. Kahn must show that he had no opportunity to litigate the issues that he raises here in the original action. *Gleason*, 860 F.2d at 560 ("an aggrieved party seeking relief under the saving clause of Rule 60(b) still must be able to show that there was no 'opportunity to have the ground not relied upon to set aside the judgment fully litigated in the original action.'")(citing *Serzysko v. Chase Manhattan Bank*, 461 F.2d 699, 702 n. 2). Mr. Kahn cannot and has not met his burden.

Mr. Kahn claims that General Motors did not provide enough information to the Court concerning the demonstration. Even assuming that a further explanation of the signal used in the demonstration or distortion

measurements relating to the demonstration conducted by GM were somehow relevant, failure to make or disclose those measurements is not a fraud on the court as a matter of law. "[T]he mere nondisclosure to an adverse party and to the court of facts pertinent to a controversy before the court does not add up to 'fraud upon the court' for purposes of vacating a judgment under Rule 60(b)." *Kerwit Medical Products, Inc. v. N.&H. Instruments, Inc.*, 616 F.2d 83, 837 (5th Cir. 1980).

Mr. Kahn had the opportunity to cross-examine Mr. Buchwald concerning what signal was used in connection with the demonstration and any additional measurements that could be made. Having chosen not to raise these issues at trial, Mr. Kahn cannot do so now on a motion under Rule 60(b).

Mr. Kahn was aware years prior to trial of the arguments that he now makes concerning the demonstration. Mr. Kahn had previously raised these very same arguments in response to an affidavit by Lawrence M. Ecklund submitted by General Motors in support of its motion for summary judgment of non-infringement. Indeed, the Ecklund affidavit, which was filed and served on Mr. Kahn in 1989, illustrates the same point brought out by the demonstration at trial. Mr. Kahn submitted the Ecklund affidavit as one of his trial exhibits, Plaintiff's Exhibit PX-21. (A copy of the Ecklund affidavit is attached.)

Furthermore, the identification of the demonstration and DX266 as demonstrative exhibits cannot be considered a fraud on the court. General Motors advised Mr. Kahn prior to trial that it planned to conduct a demonstration and identified for him the equipment that would be used in the demonstration. Nothing was hidden from Mr. Kahn or the Court and no misrepresentations were made. Mr. Kahn was permitted to examine the equipment used for the

demonstration and General Motors maintained the equipment in the courtroom so that Mr. Kahn could conduct any cross examination. (April 9, 1996 transcript at p. 492). If Mr. Kahn had any objections to General Motors' use of a demonstration, he should have objected at trial. Notably, when DX-266 was offered into evidence by General Motors, Mr. Kahn stated that he had no objections. (April 10, 1996 trial transcript at p. 498). In any event, failure to disclose materials during pretrial discovery cannot serve as a basis for a finding of fraud on the court. *Gleason*, 860 F.2d at 559-60 ("allegations of nondisclosure during pretrial discovery do not constitute ground for an independent action under Rule 60(b)").

For the same reasons, the identification of Mr. Buchwald as a fact witness rather than an expert witness cannot be considered a fraud on the court. Again, nothing was hidden from Mr. Kahn or the Court and no misrepresentations were made. Mr. Buchwald was identified as a witness by General Motors. Mr. Kahn could have deposed Mr. Buchwald and determined what testimony Mr. Buchwald would give at trial, but Mr. Kahn chose not to do so. Mr. Kahn did not object at trial to Mr. Buchwald's testimony and cannot belatedly raise such an objection now.

In the end, Mr. Kahn's motion amounts to no more than dissatisfaction with this Court's and the CAFC's rulings and does not allege any basis whatsoever to set aside the judgment. If any conduct here is sanctionable, it is Mr. Kahn's dogged attempt to retry issues that have already been settled by this Court and by the CAFC.

For the foregoing reasons, Mr. Kahn's motion should be denied.

Respectfully submitted,
/s/ Linda S. Resh

cc: Leonard R. Kahn (via Facsimile and Federal Express)(with enclosures)

APPENDIX J

LEONARD R. KAHN, c/o
KAHN COMMUNICATIONS, INC.

August 14, 1997

The Honorable Harold Baer, Jr.

Subject: Request for an Order to Preserve Evidence

Dear Judge Baer:

A few days after I filed my reply brief at the Federal Circuit, it finally dawned on me just how the Defendant made its dramatic DX-266 demonstration which became the basis for the Court's finding of noninfringement. I then immediately had the necessary special equipment built to test out what I believed was GM's most ingenious method to prove the "impossible." After laboratory tests confirmed my theory, I promptly notified GM's trial counsel requesting him to investigate the matter. Please see my attached July 24, 1997 letter to Mr. Krupka and his July 30th FAXed answer concluding: "There is nothing further to discuss on this matter." In view of GM's refusal to even discuss the matter, I request that the Court issue an Order to preserve all relevant documents and things concerning and limited to the DX-266 demonstration while the case is still pending.

As Your Honor will recall, the decision finding non-infringement in the subject case was based upon a dramatic demonstration that was first performed well into the trial without notice. This demonstration "proved" that my theory of infringement, based upon conventional analysis, was wrong and GM's theory, in conflict with its own design drawings, was correct.

This DX-266 demonstration won the case. Indeed, it was the "proof" that permitted Your Honor to find that there was no infringement as DX-266 supposedly proved that one of the required elements of Claim 53 was not used in GM's radios. Indeed, the only support for the non-infringement decision was the Court's finding on page 6:

"Gregory J. Buchwald performed a demonstration showing the source of the cosine phi signal. Using an oscilloscope, he measured the L+R envelope modulation from the transmitter and the cosine phi signal at the receiver. After he cut off the envelope modulation signal at the transmitter, the cosine phi signal remained unchanged. From this, he concluded and I find that the cosine phi signal is not derived from the L+R signal; rather it is transmitted in and extracted from the phase

modulated component. TR. at 490-92, 496-99; DX-266.

The purported demonstration of the C-Quam system is fatally flawed as it was **a demonstration of an incompatible system which is in violation of FCC rules and which is clearly outside the scope of the '994 Patent.** Not only would listeners to mono radios be unable to hear any sounds that were transmitted as pure stereo, but stereo reception, as demonstrated, would be flawed.

But the real point is if one makes a valid demonstration of the stereo distortion correction circuit with the envelope removed, there is no question that distortion is not only not reduced by switching off the envelope modulation, it is dramatically increased to over 18.0% at 500 Hz, way beyond industry and FCC specs. (Please see attached lab photos showing waveshapes with and without connection to the L+R sum detector. Indeed, the distortion is over twice what it would be

if the radios didn't include distortion correction circuitry at all! (TR. 285-6 attached. GM never offered any rebuttal to the mathematical analysis offered.)

It is difficult to believe that experienced engineers would offer such "proofs" and publicly proclaim such ridiculous conclusions, before a Federal Court no less, without careful reflection.

In view of GM's attorney's refusal to even investigate the matter,[7] I believe that it is important that I promptly bring this matter to Your Honor's attention while GM should still have the critical DX-266 equipment in place pending the appeal decision.

Furthermore, the introduction of DX-266 without a description of the experiment prior to trial, violated the Court's 30 day trial exhibit notice Preclusion Clause. Surely, the ambush usage of this all important DX-266 and its designation as a "demonstrative" exhibit, should not be allowed to make a mockery of this Court's procedures.

Accordingly, I am requesting the Court to issue the attached Order.

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[7]This entire situation presents a most disturbing problem of professional ethics. The Plaintiff is almost certain that his professional peers at GM may have participated in a overall plan to mislead this Court. As a Professional Engineer since 1973, I am fully aware of the seriousness of questioning the ethics of fellow engineers. Accordingly, before even sending this letter, I would have confidentially spoken to the engineer involved and given him every opportunity to explain his side of the issue and, if necessary, discussed with him a responsible solution.

However, such professional ethics and courtesy are suspended during litigation because of the clash of the code of ethics between attorneys and engineers which denies me the opportunity to even speak to GM's experts. Thus, I had no alternative, after receiving the defendant's refusal to cooperate, but to bring this matter to Your Honor's attention.

It is not my intention to delay the appeal now pending at the Federal Circuit. I am simply requesting the preservation of evidence that will help in the determination if GM willfully misled this Court or whether the deception was the result of mere negligence.

I have carefully researched Fed. R. Civ. P. 27(b), but the cases, except for situations where the deponent is sick or over 70 years of age, are against me. However, this proposed Order to preserve all relevant evidence re the DX-266 Demonstration is clearly within this Court's "inherent power" under Chambers v. NASCO, Inc., lll S.Ct. 2123 (1991).[8]

Respectfully yours,

Leonard R. Kahn
Plaintiff, pro se

LRK/rr

Attached:
1) Proposed Order
2) Kahn 7/24/97 letter
3) Krupka 7/29/97 letter
4) Oscilloscope photographs
5) Transcript 285-6, 490-2, 496-9

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[8]This "historic power of equity to set aside fraudulently begotten judgments," Hazel-Atlas, 322 U.S., at 245, 64 S.Ct., at 1001, is necessary to the integrity of the courts, for "tampering with the administration of justice in [this] manner...involves far more than an injury to a single litigant. It is a wrong against the institutions set up to protect and safeguard the public." Id., at 246, 64 S.Ct., at 1001. Moreover, a court has the power to conduct an independent investigation in order to determine whether it has been the victim of fraud. Universal Oil, supra, 328 U.S., at 580, 66 S.Ct., at 1179. (111 S.Ct., at 2132)

6) Demonstrative exhibit DX-266

cc with attachments by Express Overnight Mail:
Robert G. Krupka, Esq., Kirkland & Ellis

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GREGORY JOHN BUCHWALD

called as a witness by the defendant,

having been duly sworn , testified as follows:

DIRECT EXAMINATION
BY MR. KRUPKA:

Q: Did you prepare a demonstration in conjunction with the attorneys and experts for General Motors in this

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case in connection with AM stereo receives?

A: Yes, I did.

x x x

MR. KAHN: Just a question for clarification: Is he testifying as a fact witness?

MR. KAHN: He is testifying as a fact witness, that is correct.

x x x

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Q: Could you conduct the demonstration that you had shown for Mr. Klein.

A: OK. We have several demonstrations that we can conduct, the first of which indicates where the cosine phi information is extracted from the receiver. We

are going to transmit the signal from here, carry it over to a General Motors Delco radio, and we are going to look at various waveforms on this oscilloscope.

Q: The General Motors Delco radio, is that an AM stereo equipped radio?

A: Yes it is.

Q: So it is your understanding that that is a radio that is accused by Mr. Kahn of infringing?

A: Yes it is.

Q: Could you proceed?

A: On the oscilloscope we have two displays. The upper display indicates the incoming envelope-modulated RF waveform from the broadcast transmission equipment, and on the lower waveform it will indicate the cosine phi waveform. Since this is a mono transmission at the current time, there is no cosine phi waveform present.

I'll begin by sending a left-channel-only transmission. The right channel has no energy in it at the present time. And on this oscilloscope we can see two waveforms that are identical. In fact, I can line them up

and they will perfectly superimpose with each other.

The upper waveform is the left plus right audio information and the lower waveform is the left minus right audio information.

Since this is a left-channel-only modulation condition, you can see a cosine waveform at the receiver. The question is, where is the cosine phi waveform extracted from? It is our contention that it is extracted from the phase-modulated component.

To prove that, I will separately modulate left plus right and left minus right with two different audio frequencies of information. I've left the upper waveform, which represents the left plus right, at approximately 500 cycles, and the lower waveform, which is the left minus right information, is currently at approximately 2,000 cycles.

And in the cosine phi waveform you can see that there is a substantial amount of energy that came from the L minus R information which must have come from the phase-modulated component.

To further prove that this energy came from the phase-modulated component, I am going to temporarily shut off the envelope modulation at the transmitter and you will observe that the cosine phi waveform will not change.

Q: Now, by the "envelope modulation," you are

referring to L plus R, is that right?

A: I'm referring to the left plus right energy that is used to envelope modulate the transmitter.

(Pause)

I have disabled the envelope modulator in the transmitter, and it is still apparent that the cosine phi waveform is present at the receiver.

Q: What happened to the wiggly lines on the top signal on this scope?

A: Those lines indicated the envelope modulation that was present at the transmitter. I've removed it at the transmitter.

Q: And the lower waveform shows what?

A: The cosine phi waveform.

Q: And the purpose of this demonstration was to show what?

A: That the cosine phi waveform is being extracted in the receiver strictly from the phase-modulated component.

MR. KRUPKA: Thank you Mr. Buchwald.

MR. KAHN: Your Honor, as a procedure, this equipment will be all set up when I do my cross-examination, won't it?

THE COURT: I trust, yes.

MR. KAHN: That is very good. Thank you.

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MR. KRUPKA: Mr. Kahn and I have discussed it, and I have one exhibit to admit through this witness.

And Mr. Kahn has decided to cross Mr. Buchwald before going back to Mr. Klein; and Mr. Kahn has requested me to complete my direct of Mr. Klein, not only on infringement but validity, and I will do that.

x x x

BY MR. KRUPKA

Q: Let me show you Exhibit 266. Can you identify that?

A: These are the two oscilloscope photographs of the experiment performed yesterday in the courtroom.

Q: Can you describe for the judge what is shown on the left photograph of defense Exhibit 266?

A: The upper trace on the left photograph indicates a envelope modulated RF wave with some low frequency audio information, and the bottom trace indicates the cosine phi waveform and contains significant L minus R energy.

Q: Where did the test point for the upper trace come off on the Delco receive?

THE COURT: Wait a minute, I don't understand

that question; and, could you rephrase it?

MR. KRUPKA: Yes, your Honor, I could.

Q: You testified that this is a picture of the oscilloscope. What was the input to the oscilloscope that generated the top waveform in the left-hand picture?

A: There were two inputs to the oscilloscope, the upper waveform, the envelope modulated RF signal, was the input to the receiver. It was the -- in this case we're at 1400 kHz, and it was the RF energy from the transmitter that is being carried to the receiver. It's the antenna input terminal.

Q: What is the input to the oscilloscope for the bottom trace of the left-hand picture of defense Exhibit 266?

A: There is a probed test point on the Delco radio, and it is a cosine phi waveform, the cosine output of the decoder IC contained within the receiver.

Q: Could you give us the same information for the right-hand picture? What is the oscilloscope input for the top trace of the right-hand picture of defense Exhibit 266?

A: The upper trace is also the RF energy. The antenna input to the Delco radio, in this case the envelope modulation, has been turned off at the transmitter.

Q: What is the input to the oscilloscope for the bottom trace of the right-hand picture of defense Exhibit 266?

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A: The bottom trace of the right-hand picture is also the cosine phi test point of the Delco radio, identical to the photograph in the left-hand side.

Q: Is the bottom trace, the input to the oscilloscope from the cosine phi output of the Delco radio at the same moment that the tope trace shows the RF or radio frequency energy coming into the antenna?

A: Yes it is.

Q: And is the same true on the left-hand picture? Are these two traces showing the condition of the Delco receiver at the same instant?

A: Yes it is.

MR. KRUPKA: Your Honor, at this time I would offer into evidence defense Exhibit 266.

THE COURT: Any objection?

MR. KAHN: No, sir.

THE COURT: Very well, defense Exhibit 266 will be admitted, there being no objection.

x x x

THE COURT: Wait a minute. Before you do that, would you now like to sum up and tell me what you conclude from that, if anything, from those two diagrams?

THE WITNESS: Would you like me to?

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THE COURT: Yes.

THE WITNESS: These two diagrams or two photographs show that the cosine phi energy which is applied to the analog divider in the Motorola decoder IC is extracted solely from the phase modulated

energy of the transmitted radio wave; that the envelope signal has no bearing upon the cosine phi waveform.

x x x

CROSS-EXAMINATION
BY MR. KAHN:

Q: Mr. Buchwald, to continue that a little bit, is this -- are you looking at the receiver? Are you familiar with feedback?

A: Somewhat, yes.

Q: You understand the operation of this receiver, right?

A: Yes I do.

Q: Does it use feedback?

A: Yes it does.

Q: Do you know that there has to be an error signal to correct distortion and so on with a feedback system?

A: Yes.

Q: If you do not have that error correction of that little error, that little tiny bit of an error, that no

feedback system can work?

A: Well, in this case --

Q: No, I'm asking you generally. Stay with my question.

A: In a generalized feedback system, yes.

Q: And you are not looking at that error --

x x x

Q: -- because you are not testifying as an expert, are you?

A: No, I am not.

Q: You are under oath, though, right?

A: Yes, I am.

Q: Are you an expert, an expert on AM stereo?

A: As far as receive design I would say no.

Q: Are you as knowledgeable about receiver design of AM stereo now, that is all I am talking about, as Mr. Harrison Klein, under oath, now?

THE COURT: If you know.

A: I don't know.

x x x

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BY MR. KAHN:

Q: As somebody -- you are familiar with transmission systems?

A: Yes, I am.

Q: You feel you know what you are doing on a transmission system? You adjusted this equipment, correct?

A: I adjusted this equipment, yes.

Q: And you've done this in many, many stations?

A: Motorola equipment, yes.

Q: Yes. You are not knowledgeable on mine, particularly, are you?

A: I've set up your equipment, but only for this demonstration.

Q: But we did not demonstrate it, so --

A: It's a moot point.

THE COURT: You tested it to see if it worked. What did you do, since you said you set it up?

THE WITNESS: We had it available for other

possible demonstrations that we are not going to do.
THE COURT: But have you worked with it so that you, in fact, know how it works?

THE WITNESS: Yes.

Q: You say that. Would you think you are as good as I am knowledgeable about that piece of equipment?

x x x

A: You designed the equipment, Mr. Kahn. I would not be as knowledgeable as you are about its operation?

Q: If it is incorrectly adjusted, any test you make is useless, isn't that correct?

A: That's correct.